

Air Grippers for Collaborative Robots

New Tool changers (one-push and auto types) and a tool holder have been added.

Unitization of the peripheral devices required for gripper driving

Operation is possible simply by connecting 1 air supply tube and 1 electrical cable.

Built-in

Solenoid valve

Exhaust throttle valve with silencer

Auto switch

Fitting



* The attachment should be ordered separately by the customer.

3 types of grippers available for use with a variety of workpieces

Standard Type



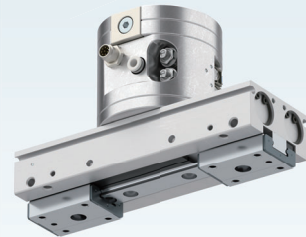
RMHZ2 Series

3-Finger Type



RMHS3 Series

Long Stroke Type

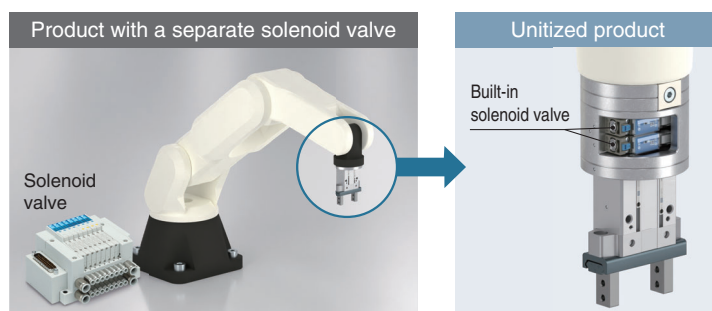


RMHF2 Series

Can be used with the collaborative robots of 13 companies

UNIVERSAL ROBOTS, OMRON/TECHMAN ROBOT, FANUC, YASKAWA Electric, Mitsubishi Electric, HAN'S ROBOT, KUKA, DOOSAN ROBOTICS, SIASUN, JAKA, AUBO, ABB, **New** DENSO WAVE

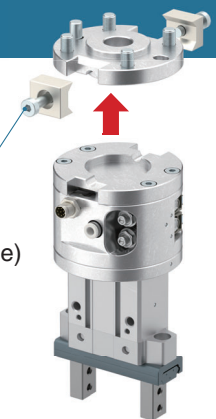
Air consumption reduced by up to 80 %



Select from 3 types of tool changer. **p. 3**

Simple operation allows for easy tool changing.

- Clamp type (Manual override)
- New** One-push type (Manual override)
- New** Auto type



Allows for temporary workpiece drop prevention. **p. 4**

When normally open (N.O.) or normally closed (N.C.) is selected for the valve and the power is cut off, the finger remains open or closed, respectively.

RMH Series



CAT.EUS160-7B-UK

Standard Type

RMHZ2 Series

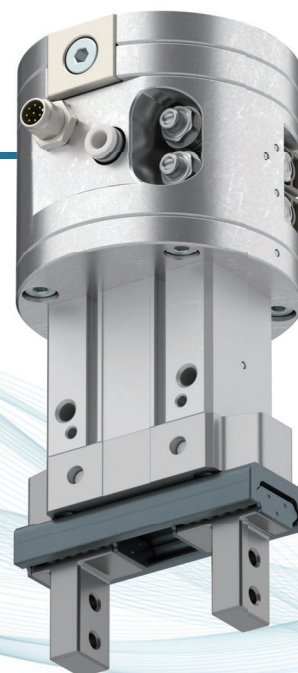
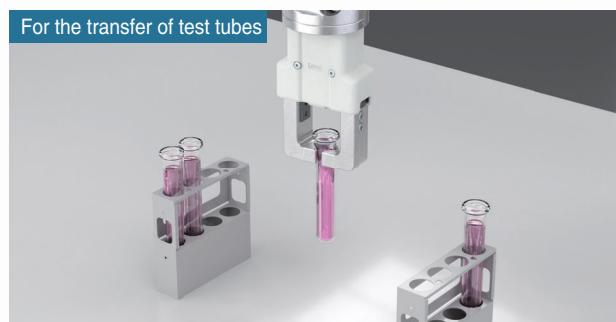
- High rigidity and precision are achieved by integrating the guide and finger.
- With high-precision linear guide

Specifications

Gripping force*1 Effective value per finger	External	54.2 N
	Internal	72.2 N
Opening/Closing stroke (Both sides)		14 mm
Weight		638 g*2

*1 Gripping force is measured at a pressure of 0.5 MPa.

*2 This is the value excluding the weights of the protective cover and connector cable.



3-Finger Type

RMHS3 Series

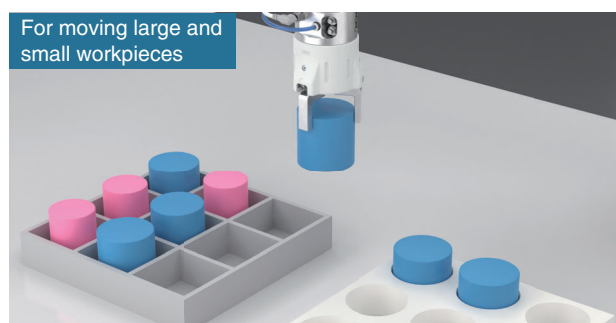
- Suitable for axial gripping of cylindrical workpieces

Specifications

Gripping force*1 Effective value per finger	External	118 N
	Internal	130 N
Opening/Closing stroke (Diameter)		8 mm
Weight		776 g*2

*1 Gripping force is measured at a pressure of 0.5 MPa.

*2 This is the value excluding the weights of the protective cover and connector cable.



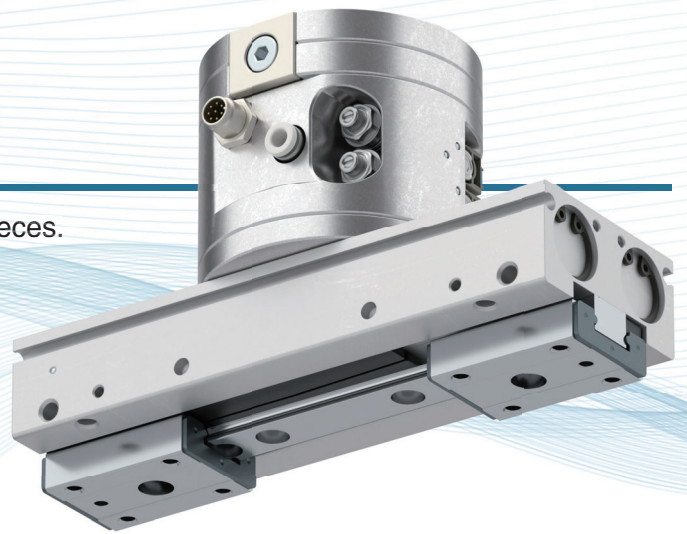
Long Stroke Type p. 33

RMHF2 Series

- The 64 mm long stroke is ideal for a variety of workpieces.
- Height reduced by approx. 35 %
(Compared with the standard type)
- Actuator position sensor mountable (Option)
(Collaborative robot manufacturer: Compatible with robots from UNIVERSAL ROBOTS, FANUC CORPORATION and DENSO WAVE INCORPORATED))

Workpiece length measurement and discrimination can be performed.

- The stroke position is output with an analogue signal.
- Repeatability: 0.1 mm



Actuator position sensor

D-MP050A equivalent

Protective cover

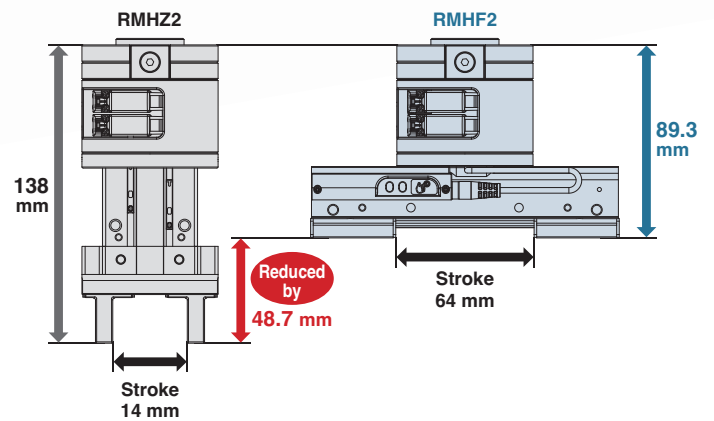


Specifications

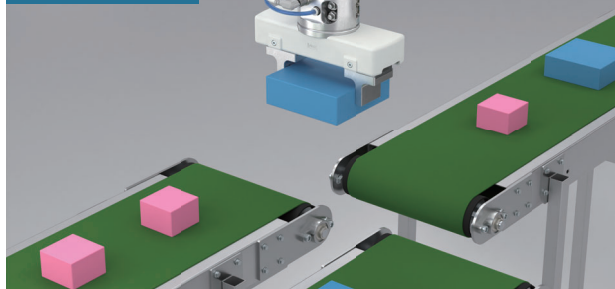
Gripping force*1 Effective value per finger	90 N
Opening/Closing stroke (Both sides)	64 mm
Weight	945 g*2

*1 Gripping force is measured at a pressure of 0.5 MPa.

*2 This is the value excluding the weights of the protective cover and connector cable.

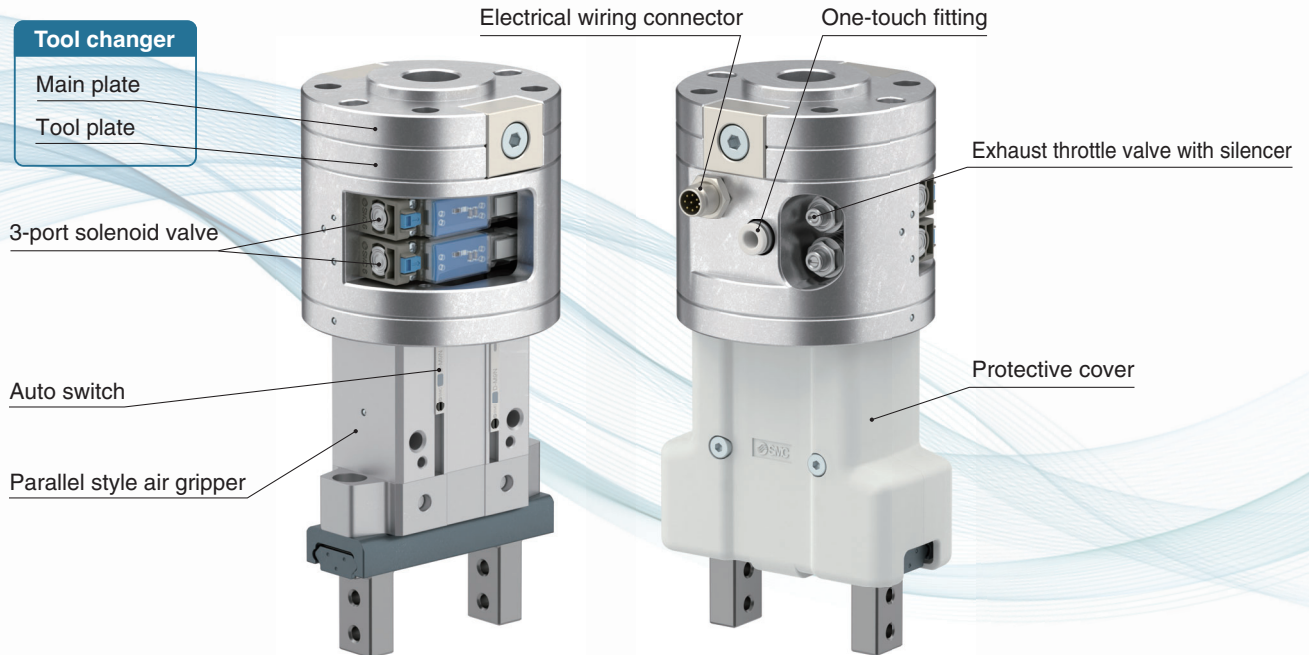


For parts selection



■ Easier mounting and maintenance

- A split protective cover for easy air gripper maintenance
- Standards: ISO 9409-1-50-4-M6



■ Select from 3 types of tool changer. Reduced mounting and maintenance labor

Clamp Type (Manual override)

Hand tools can be attached/removed by clamber bolts (2 pcs).



One-push Type (Manual override)

Hand tools can be attached/removed by the push of a button (no tools required).



Auto Type

Allows for the easy automatic change of hand tools



Details of each gripper

· Standard Type [p. 17](#) · 3-Finger Type [p. 25](#) · Long Stroke Type [p. 33](#)

Options

Protective covers



For RMHZ2



For RMHS3



For RMHF2

Connector cable



For applicable robots, refer to page 42.

Air consumption reduced by up to 80 %

- Air consumption is significantly reduced compared to when the solenoid valve is installed separately for the same type of model.

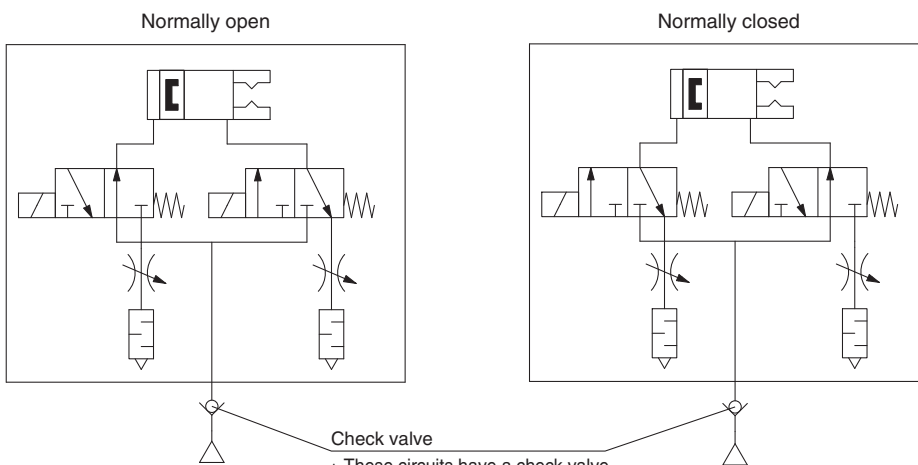
Product with a separate solenoid valve	Unitized product								
<p style="text-align: center;">Solenoid valve</p>	<p style="text-align: center;">Built-in solenoid valve</p>								
	<p>Consumption air can be reduced because long piping is not required.</p>								
	<p>Air Consumption Reduction by Model (Per stroke)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr style="background-color: #4a7c96; color: white;"> <th>Model</th> <th>Air consumption reduction</th> </tr> </thead> <tbody> <tr> <td>RMHZ2</td> <td style="text-align: center;">80 %</td> </tr> <tr> <td>RMHS3</td> <td style="text-align: center;">60 %</td> </tr> <tr> <td>RMHF2</td> <td style="text-align: center;">30 %</td> </tr> </tbody> </table>	Model	Air consumption reduction	RMHZ2	80 %	RMHS3	60 %	RMHF2	30 %
Model	Air consumption reduction								
RMHZ2	80 %								
RMHS3	60 %								
RMHF2	30 %								
	<p>* Conditions</p> <ul style="list-style-type: none"> · Piping I.D.: Ø 2.5 mm · Piping length: 2 m · Number of pipes: 2 · Supply pressure: 0.5 MPa 								

Allows for temporary workpiece drop prevention



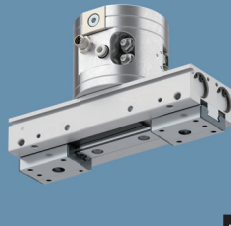
- Valve option: Normally open, Normally closed

If power to the solenoid valve is cut off while air is being supplied, the finger remains open or closed depending on the valve option. It can be used as a workpiece drop prevention function during transportation when there is a power failure.

- * The customer must install a check valve, etc., so that the air being supplied to the gripper is not exhausted when the power is cut off.
- * After the power is cut off, the gripper gripping force may gradually decrease the longer it is without power. Therefore, even if the drop prevention function is activated, be sure to quickly move the workpiece to a safe position in the case of an emergency.



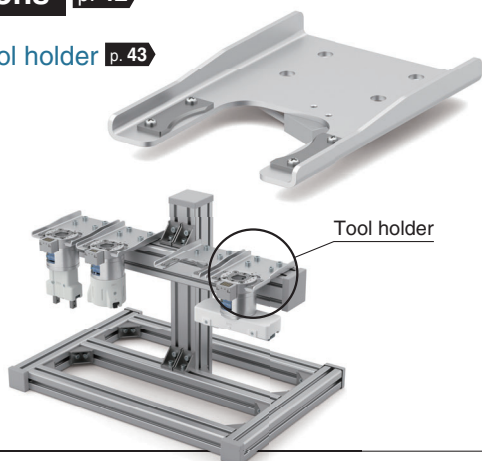
Series Variations

		Standard Type RMHZ2 Series	3-Finger Type RMHS3 Series	Long Stroke Type RMHF2 Series
		 p. 17	 p. 25	 p. 33
Number of fingers		2	3	2
Gripping force	External gripping force [N]	54.2	118	90
	Internal gripping force [N]	72.2	130	90
Opening/Closing stroke (Both sides) [mm]		14	8	64
Piping diameter [mm]		4	4	4
Weight [g]	Clamp type	638	776	945
	One-push type	645	783	952
	Auto type	948	1086	1255
Options	Protective cover	●	●	●
	Connector cable	●	●	●
	Actuator position sensor	—	—	●
	Built-in valve	●	●	●
	Tool changer/Clamp type	●	●	●
	Tool changer/One-push type	●	●	●
	Tool changer/Auto type	●*1	●*1	●*1
Plug-in software	●	●	●	
Compatible robot manufacturer		13 companies	13 companies	13 companies

*1 Compatible with robots from UNIVERSAL ROBOTS, OMRON Corporation/TECHMAN ROBOT, YASKAWA Electric Corporation DTP Series, FANUC CORPORATION and DENSO WAVE INCORPORATED

Options p. 42

● Tool holder p. 43



● Robot manufacturer dedicated flanges p. 45

YASKAWA Electric, Mitsubishi Electric, OMRON/TECHMAN ROBOT

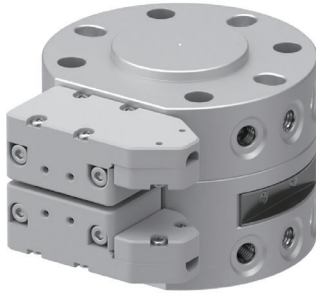


Tool Changer

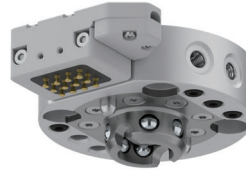
Auto Type *RMTA Series*

Robot hand tool automatic exchange

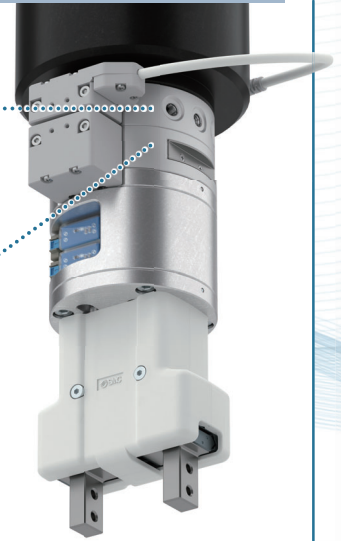
- Work load: 5 kg, 10 kg, 20 kg
- Standards: ISO9409-1 compliant
Support for direct mounting on collaborative robots



Main plate



Tool plate



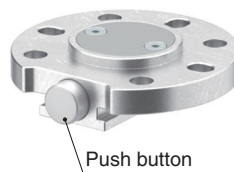
One-push Type *RMTM1 Series*

Tools can be attached/removed by the push of a button (no tools required).

- Work load: 10 kg
- Repeatability: ± 0.01 (Position reproducibility)

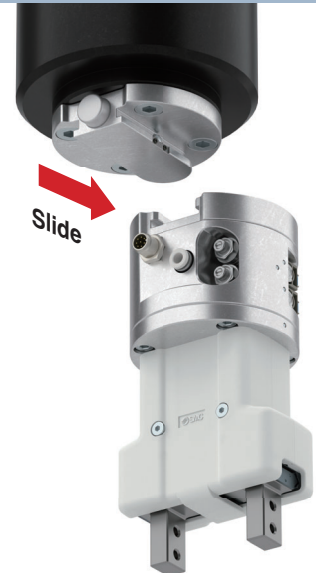


Main plate



Push button

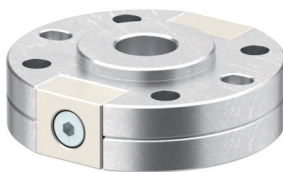
Tool plate



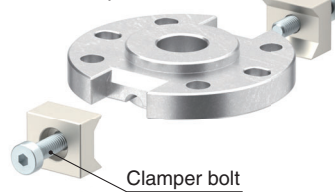
Clamp Type *RMTM2 Series*

Tools can be attached/removed by clamber bolts (2 pcs).

- Work load: 20 kg
- Repeatability: ± 0.02 (Position reproducibility)



Main plate



Clamber bolt

Tool plate

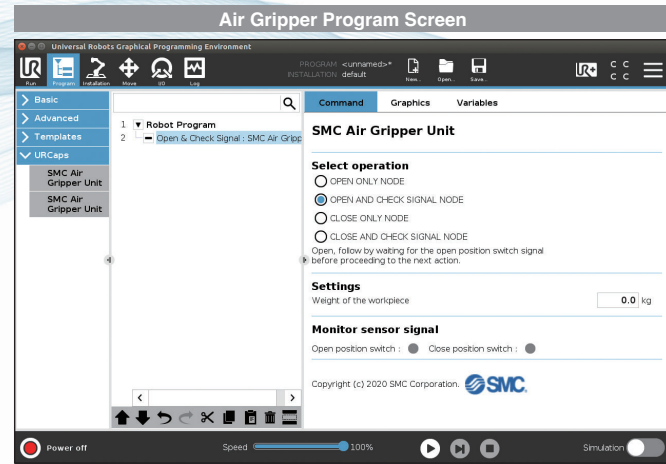


Plug-in Software

Compatible with robots from UNIVERSAL ROBOTS, OMRON Corporation/TECHMAN ROBOT, FANUC CORPORATION, YASKAWA Electric Corporation and DENSO WAVE INCORPORATED

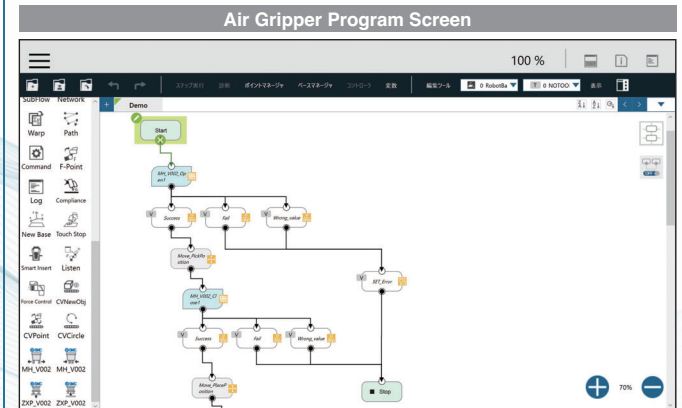
UNIVERSAL ROBOTS

URCap



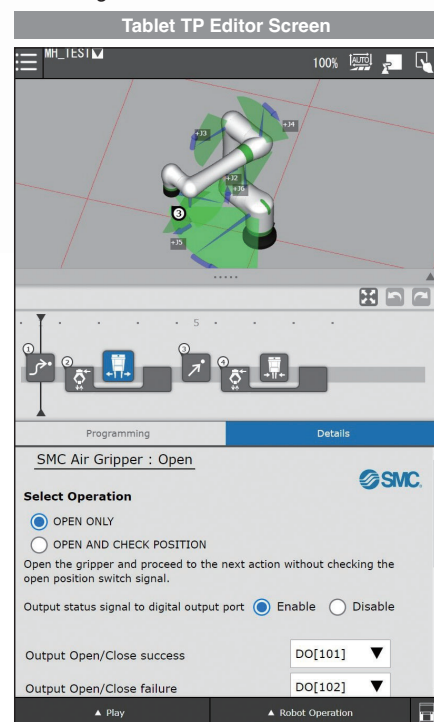
OMRON/TECHMAN ROBOT

TMComponent



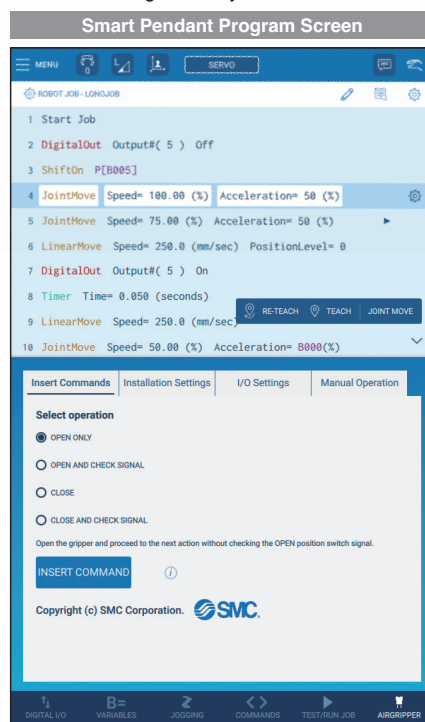
FANUC

CRX Plug-in



YASKAWA Electric

YASKAWA Plug and Play Kit



DENSO WAVE

Library



Compatible with the robots of 13 robot manufacturers

UNIVERSAL ROBOTS, OMRON/TECHMAN ROBOT, FANUC, YASKAWA Electric, Mitsubishi Electric, HAN'S ROBOT, KUKA, DOOSAN ROBOTICS, SIASUN, JAKA, AUBO, ABB, DENSO WAVE

Related Products

Multi Hand Adapter RMMA Series

Multi hand adapter

Allows for the handling of various workpieces by a single robot

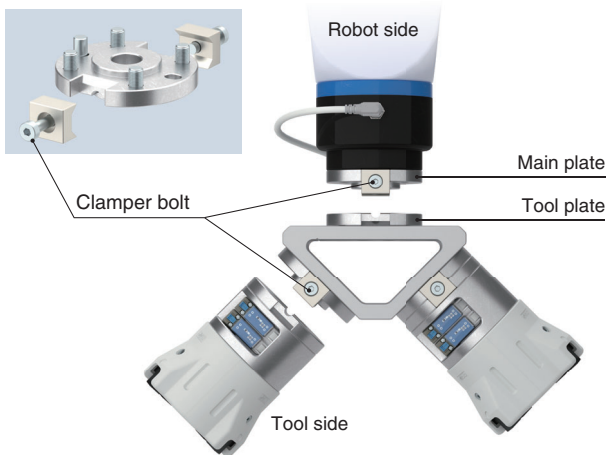
Allows for the simultaneous transfer of multiple workpieces

- Up to 3 grippers can be mounted.
- Reduces tool changing time



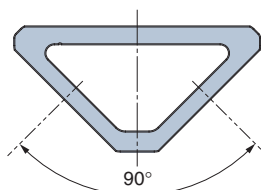
Robot arm end standards: Equivalent to ISO9409-1-50-4-M6

Mounting and removal are possible using the 2 clamber bolts.

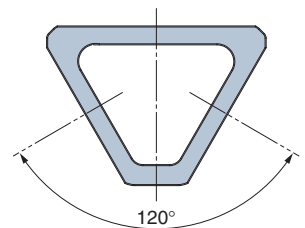


3 gripper mounting angles

90° type

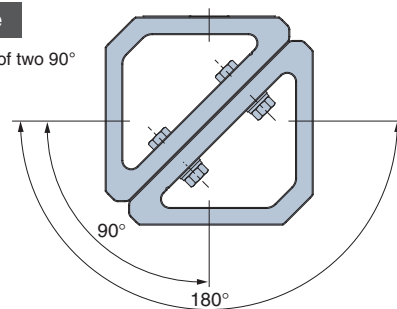


120° type



180° type

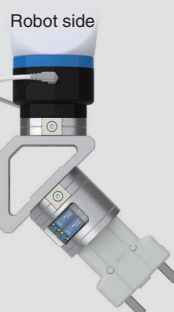
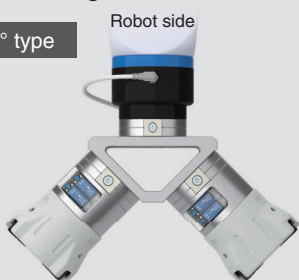
Combination of two 90° type adapters



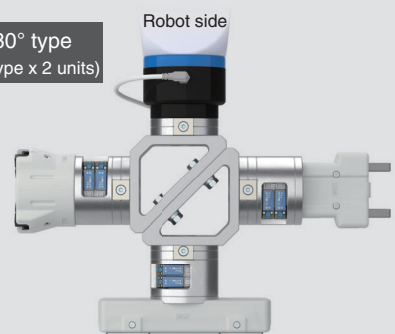
Gripper Mounting Example

A wide range of combinations is possible. Mounting angles can be selected according to the specifications.

90° type



180° type
(90° type x 2 units)



C O N T E N T S

Air Grippers for Collaborative Robots

RMH□ Series

Model Selection	p. 11
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Air Gripper for Collaborative Robots/Standard Type

RMHZ2 Series

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Specific Product Precautions	p. 24

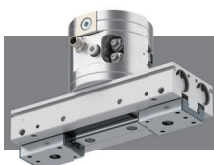


Air Gripper for Collaborative Robots/3-Finger Type

RMHS3 Series

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Specific Product Precautions	p. 32



Air Gripper for Collaborative Robots/Long Stroke Type

RMHF2 Series

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Options

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Connector Cable	p. 42
Tool Holder	p. 43
Replacement Parts	p. 44
Robot Manufacturer Dedicated Flanges	p. 45

RMH□ Series Model Selection

Checking whether a workpiece can be transferred

Selection Procedure



Step 1 Check the gripping force.



Example

Workpiece mass: 0.2 kg → Guidelines for gripping force with respect to workpiece mass

Gripping method: External gripping → Guidelines for gripping force with respect to workpiece mass

Gripping point: 30 mm → Guidelines for gripping force with respect to workpiece mass

Operating pressure: 0.2 MPa → Guidelines for gripping force with respect to workpiece mass

Guidelines for gripping force with respect to workpiece mass

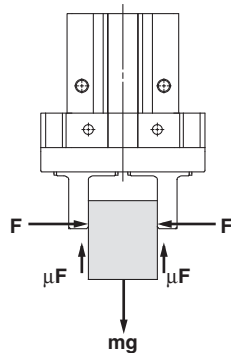
- Although conditions vary depending on the coefficient of friction between the attachment and the workpiece as well as the shape, adjust so that the gripping force is at least 5 to 10 times^(*) greater than the workpiece weight.
 - *1 Refer to the gripping force calculation explanatory drawing for more information.
- Further allowance should be provided when great acceleration or impact is expected during workpiece transfer.
 - Example) For setting the gripping force to be at least 10 times greater than the workpiece weight: Required gripping force = 0.2 kg x 10 x 9.8 m/s² ≈ 19.6 N or more

RMHZ2-20D External Gripping Force

• When the RMHZ2-20D is used
A gripping force of 20 N is obtained from the intersection point of gripping point L = 30 mm and a pressure of 0.2 MPa.

• Since a gripping force of 20 N satisfies the required gripping force of 19.6 N or more, the workpiece can be transferred by the RMHZ2-20D.

Gripping force calculation explanatory drawing



“Gripping force at least 5 to 10 times greater than the workpiece weight”

• The “at least 5 to 10 times greater than the workpiece weight” recommended by SMC is calculated with a margin of “a” = 2, which allows for impacts that occur during transfer by collaborative robots, etc.

When $\mu = 0.2$	When $\mu = 0.1$
$F = \frac{mg}{2 \times 0.2} \times 2$ $= 5 \times mg$	$F = \frac{mg}{2 \times 0.1} \times 2$ $= 10 \times mg$
↑ 5 x Workpiece weight	↑ 10 x Workpiece weight

When gripping a workpiece as in the figure to the left, and with the following definitions,
F : Gripping force [N]
 μ : Coefficient of friction between the attachments and the workpiece
m : Workpiece mass [kg]
g : Gravitational acceleration (= 9.8 m/s²)
mg : Workpiece weight [N]

the conditions under which the workpiece will not drop are

$$2 \times \mu F > mg$$

↑
Number of fingers

and therefore,

$$F > \frac{mg}{2 \times \mu}$$

With “a” representing the margin, “F” is determined by the following formula:

$$F = \frac{mg}{2 \times \mu} \times a$$

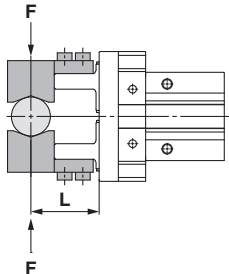
- (*) - Even in cases where the coefficient of friction is greater than $\mu = 0.2$, or the number of fingers is 3, for safety reasons, select a gripping force which is at least 5 to 10 times greater than the workpiece weight, as recommended by SMC.
- This product has a smaller margin than our standard grippers as it is designed for use with a collaborative robot (acceleration 1000 mm/s², speed 250 mm/s). However, the gripping force margin should be increased in the following cases.
 - For large accelerations or impacts exceeding the above, a larger margin should be considered.
 - If the finger and workpiece contact surfaces are small, even if the gripping force is 5 to 10 times the workpiece weight, there is a risk of the workpiece falling. A material with a high coefficient of friction such as rubber is recommended for the end of the finger.
 - To check whether a workpiece can be transferred under the actual conditions (such as the finger shape, material, grip method, amount of acceleration, and ambient environment), the customer must conduct a workpiece transfer test.

Checking whether a workpiece can be transferred/RMHZ2

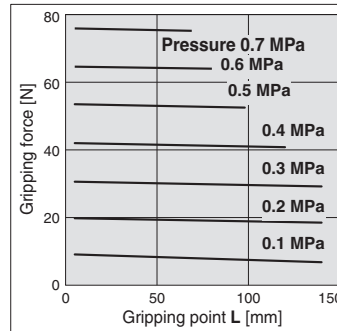
Step 1 Check the effective gripping force.

The gripping force shown in the graphs represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece.
 F = One finger thrust

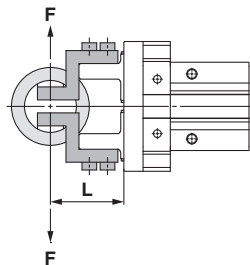
External gripping state



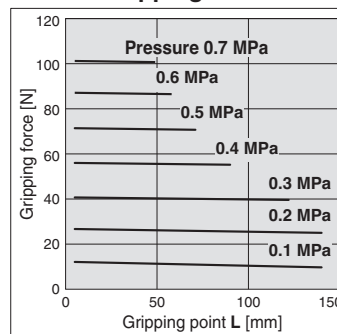
External Gripping Force



Internal gripping state



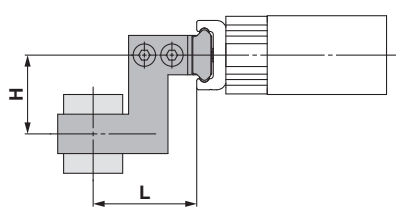
Internal Gripping Force



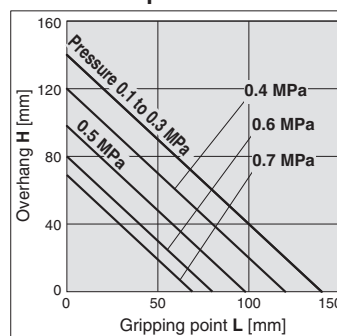
Step 2 Check the gripping point.

- The air gripper should be operated so that the workpiece gripping point "L" and the amount of overhang "H" stay within the range shown for each operating pressure given in the graphs below.
- If the workpiece gripping point goes beyond the range limits, this will have an adverse effect on the life of the air gripper.

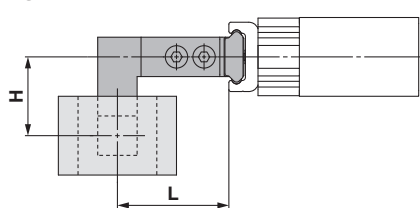
External gripping state



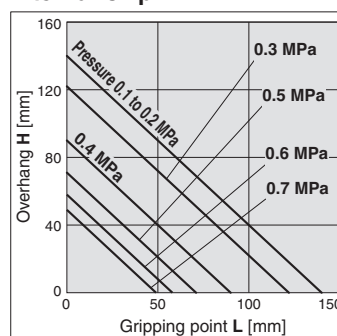
External Grip



Internal gripping state



Internal Grip

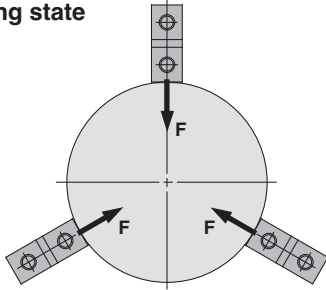


Checking whether a workpiece can be transferred/RMHS3

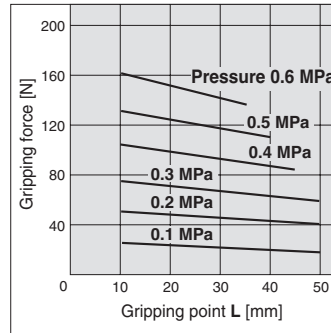
Step 1 Check the effective gripping force.

The gripping force shown in the graphs represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece.
 F = One finger thrust

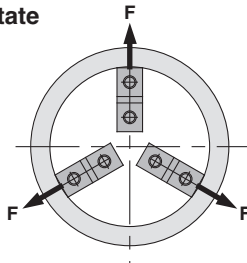
External gripping state



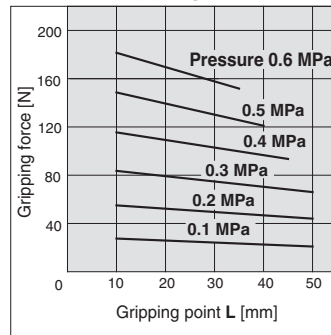
External Gripping Force



Internal gripping state



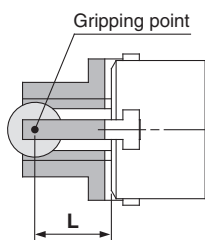
Internal Gripping Force



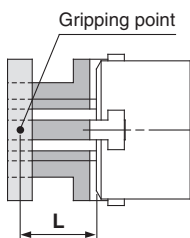
Step 2 Check the gripping point.

The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs (Step 1).
 If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.

External gripping state



Internal gripping state

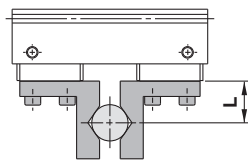


Checking whether a workpiece can be transferred/RMHF2

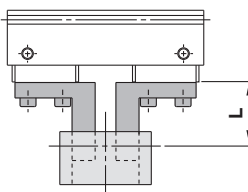
Step 1 Check the effective gripping force.

The gripping force shown in the graph represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece.
 F = One finger thrust

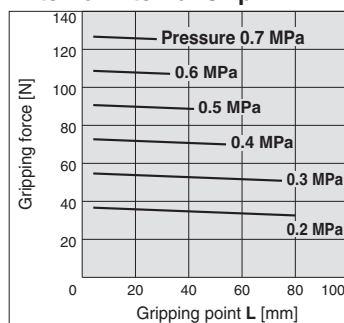
External gripping state



Internal gripping state



External/Internal Grip

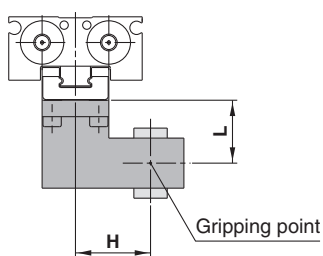


Step 2 Check the gripping point.

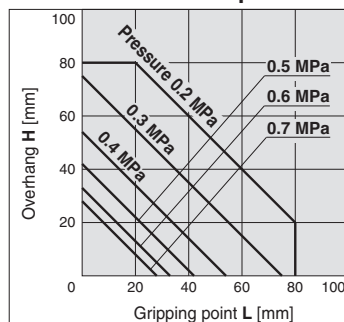
The air gripper should be operated so that the workpiece gripping point "L" and the amount of overhang "H" stay within the range shown for each operating pressure given in the graphs below.

If the workpiece gripping point goes beyond the range limits, this will have an adverse effect on the life of the air gripper.

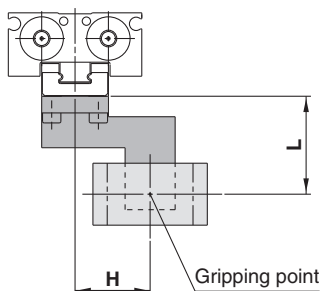
External gripping state



External/Internal Grip

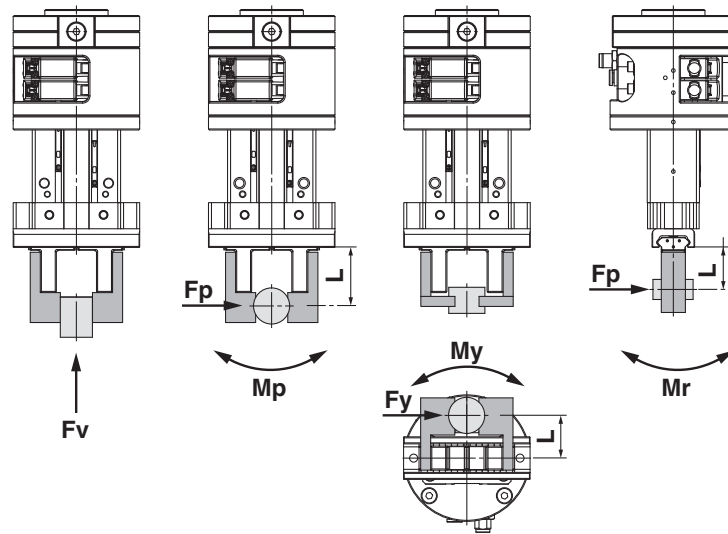


Internal gripping state



Checking whether a workpiece can be transferred

Step 3 Check the external force on fingers.



Model	Max. allowable moment/load*1, *2			
	Vertical load Fvmax [N]	Pitch moment Mpmax [N·m]	Yaw moment Mymax [N·m]	Roll moment Mrmax [N·m]
RMHZ2-20	176	2.1	2.1	4.2
RMHF2-16	176	1.4	1.4	2.8

*1 Inertial loads will be generated at the stroke end when the product is used for transportation. Consider the rate of acceleration.

*2 Ensure moments and loads are the allowable values or less.

* When combining a vertical load and moment, make sure the load factor is 1 or less according to the equation below.

$F_v/F_{vmax} + M_p/M_{pmax} + M_y/M_{ymax} + M_r/M_{rmax} \leq 1$ (Load factor)

* For the RMHS, the above definition of moment does not apply. After confirming the workpiece weight and gripping force, check whether the workpiece can be transferred using the actual device.

For the RMHZ2 and RMHF2

* The allowable values in the table vary from those of the single unit air gripper. For more information on single unit air grippers, refer to the JMHZ2-20D and MHF2-16D2 standard product catalogues.

Air Gripper for Collaborative Robots Standard Type

RMHZ2 Series



How to Order

RMHZ2-20D- NO-NDE

1
2
3
4
5
6

1 Compatible robot

The symbols are shown in "Table 1 Compatible Robot List."

2 Switch selection



N	Auto switch (NPN)
P	Auto switch (PNP)

4 Connector cable

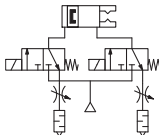
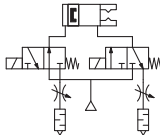
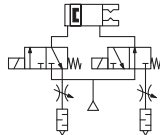
—	With connector cable
N	Without connection cable

* Only "N" is available for the auto type mounting interface.

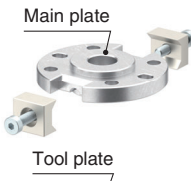








5 Protective cover

—	Without protective cover	
D	With protective cover	

3 Valve option

—	O	C
Basic type	Normally open	Normally closed
		

6 Mounting interface/Tool changer

Symbol	With main plate	Symbol	Without main plate
E	Clamp type  Main plate  Tool plate	F	Clamp type  Tool plate
E1	One-push type  Main plate  Tool plate	F1	One-push type  Tool plate
E2	Auto type  Main plate  Tool plate	F2	Auto type  Tool plate

- * The main plate is required to mount the gripper to the robot. Customers who already have a main plate can select "Without main plate".
- * The main plates are not interchangeable between different product types.



Table 1 Compatible Robot List

Symbol		Robot manufacturer	Supported model	Switch output	Valve polarity	Mounting interface						
Identification	Switch selection					Clamp	One-push	Auto				
011	P	UNIVERSAL ROBOTS	UR3e	PNP	-COM	○	○	○				
			UR5e									
			UR10e									
			UR16e									
021	N	OMRON/ TECHMAN ROBOT	TM□	NPN	+COM	○	○	○*1				
			TM□S									
031	N	Mitsubishi Electric	MELFA ASSISTA (RV-5AS-D)	NPN	+COM	○	○	—				
	P			PNP	-COM							
041	N	YASKAWA Electric	MOTOMAN-HC10	NPN	+COM	○	○	—				
	P			PNP	-COM							
042	N			MOTOMAN-HC10DT	NPN	+COM	○	○	—			
	P				PNP	-COM						
043	N			MOTOMAN-HC10(S)DTP MOTOMAN-HC20(S)DTP	NPN	+COM	○	○	○			
										P	PNP	-COM
	051				P	FANUC	CRX-5iA	PNP	-COM			
							CRX-10iA(L)					
CRX-20iA												
CRX-30iA												
061	P	KUKA	LBR-iiwa (Media flange: I/O Pneumatic)	PNP	-COM	○	○	—				
071	P	Doosan Robotics	H2017	PNP	-COM	○	○	—				
			H2515									
			M0609									
			M0617									
			M1013									
			M1509									
081	P	SIASUN	SCR3	PNP	-COM	○	○	—				
			SCR5									
			GCR3-620									
			GCR5-910									
			GCR10-1300									
			GCR14-1400									
			GCR20-1100									
091	N	JAKA	JAKA Zu3	NPN	+COM	○	○	—				
			JAKA Zu5									
			JAKA Zu7									
			JAKA Zu12									
	P		JAKA Zu3	PNP	-COM							
			JAKA Zu5									
			JAKA Zu7									
			JAKA Zu12									
101	N	AUBO	AUBO-i3	NPN	+COM	○	○	—				
			AUBO-i5									
			AUBO-i10									
111	P	HAN'S ROBOT	E03	PNP	-COM	○	○	—				
			E05									
			E10									
121	P	ABB	Gofa	PNP	-COM	○	○	—				
141	N	DENSO WAVE	COBOTTA PRO 900	NPN	+COM	○	○	○				
			COBOTTA PRO 1300									
	P		COBOTTA PRO 900	PNP	-COM							
			COBOTTA PRO 1300									

*1 When using the tool holder on a robot with a camera, the tool holder will interfere with the camera, so be sure to use the extension flange (option). (Refer to page 46 for details.)

* Please contact our nearest sales office for the compatibility with robots not listed in the compatible robot list.

RMHZ2 Series

Specifications

Item		Specification	
Common	Standards	Compliant with ISO 9409-1-50-4-M6*1	
	Fluid	Air	
	Operating pressure	0.1 to 0.7 MPa	
	Ambient and fluid temperatures	-10 to 50 °C*2	
	Repeatability	±0.01 mm	
	Max. operating frequency	120 C.P.M.	
	Lubricant	Non-lube	
	Action	Double acting	
	Gripping force Effective value per finger	External	54.2 N*3
		Internal	72.2 N*3
	Opening/Closing stroke (Both sides)	14 mm	
	Weight	Clamp type	638 g*4
		One-push type	645 g*4
		Auto type	948 g*4
	Connector type	M8, 8-pin (Plug)	
Air pressure supply (P) port	One-touch fitting (Ø 4)		
Power supply voltage	24 VDC ±10 %*2		
Solenoid valve	Model	V114/V124	
Auto switch	Model	D-M9N/D-M9P	
Exhaust throttle valve	Model	ASN2-M5-X937	

*1 Robots whose end effector mounting standard differs are equipped with a dedicated mounting flange. (Refer to pages 45 and 46.)

*2 Only when the compatible robot is KUKA's LBR-iiwa, the power supply voltage is 24 VDC (-15 %/+20 %) and the max. operating temperature is 40 °C.

*3 These are values at the stroke centre when the pressure is 0.5 MPa and the gripping point distance L is 20 mm.

*4 This is the value excluding the weights of the protective cover and connector cable.

Valve Specifications

Operating temperature	-10 to 50 °C (40 °C*1) No freezing
Manual override	Non-locking push type
Mounting orientation	Unrestricted (Based on gripper mounting orientation)
Enclosure	Dust-protected

*1 For robot identification symbol 061P

Solenoid Specifications

Coil rated voltage	24 VDC
Allowable voltage fluctuation	-10 to +10 % (-15 % to +20 %*1)
Power consumption	0.4 W (0.55 W*1)
Surge voltage suppressor	Varistor

*1 For robot identification symbol 061P

Auto Switch Specifications

Output type	NPN/PNP (Depends on the robots)
Power supply voltage	24 VDC
Current consumption	10 mA or less
Load voltage	28 VDC or less (NPN)
Load current	40 mA or less
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)
Leakage current	100 µA or less at 24 VDC

Refer to page 12 for more information on model selection using the effective "gripping force" and "gripping point."

Tool Changer/Auto Type Specifications

Operating pressure range	0.4 to 0.7 MPa
Withstand pressure	1.05 MPa
Repeatability (Position reproducibility)	±0.01 mm
Recommended clearance before coupling	1 mm

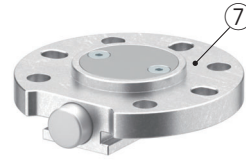
* For details, refer to the auto type tool changer in the **Web Catalogue**.

Component Parts

Clamp Type



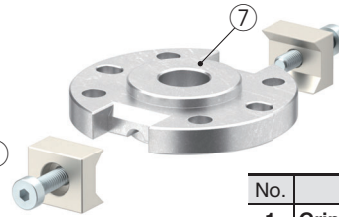
One-push Type



Auto Type



Clamp Type



No.	Description
1	Gripper
2	3-port solenoid valve
3	Exhaust throttle valve with silencer
4	One-touch fitting
5	Protective cover
6	Auto switch
7	Main plate

Replacement Parts

Description		Order number	Included parts
Gripper assembly		RMH-A13-01	①
Protective cover assembly		RMH-A13-08	⑤, Mounting screw
Dedicated flange	Mitsubishi Electric: 031N, 031P	JMHZ-A16-X7400-BRK-01	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 041N, 041P	JMHZ-A16-X7400-BRK-02	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 042N, 042P	JMHZ-A16-X7400-BRK-03	
Auto switch assembly*1	PNP	RMH-A00-05-P	⑥
	NPN	RMH-A00-05-N	
3-port solenoid valve	Normally open*2	V124-5MOU	②
	Normally closed	V114-5MOU	
	KUKA: Normally open*2, *3 061P	V114-5MOU-X647	
	Normally closed*3	V124-5MOU-X647	
Main plate assembly (Clamp type)	Other than the following	RMH-A00-09-A	⑦
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N	RMH-A00-09-B	
	JAKA: 091N/091P ABB: 121P	RMH-A00-09-C	
Main plate (One-push type)	Other than the following	RMTM1-M1-X101	⑦
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N	RMTM1-M1-X101B	
	JAKA: 091N/091P ABB: 121P	RMTM1-M1-X101C	
Main plate (Auto type)	UNIVERSAL ROBOTS: 011P YASKAWA Electric: 043N/043P FANUC: 051P DENSO WAVE: 141P/141N	RMTA1-10M1-C3	⑦
	OMRON/ TECHMAN ROBOT: 021N	RMTA1-10M1-C4	
Connector cable		Refer to page 42.	
Piping plate assembly*2		RMH-A00-06	Piping plate, Mounting bolt, O-ring
One-touch fitting		KQ2S04-M5N	④
Exhaust throttle valve with silencer		ASN2-M5-X937	③

*1 An auto switch assembly is an assembly part in which 2 auto switches are integrated into one part. When replacing an auto switch, replacement is conducted in units of auto switch assembly. An individual auto switch cannot be replaced.

*2 When installing a normally-open valve, a piping plate assembly is necessary. For details, refer to the operation manual.

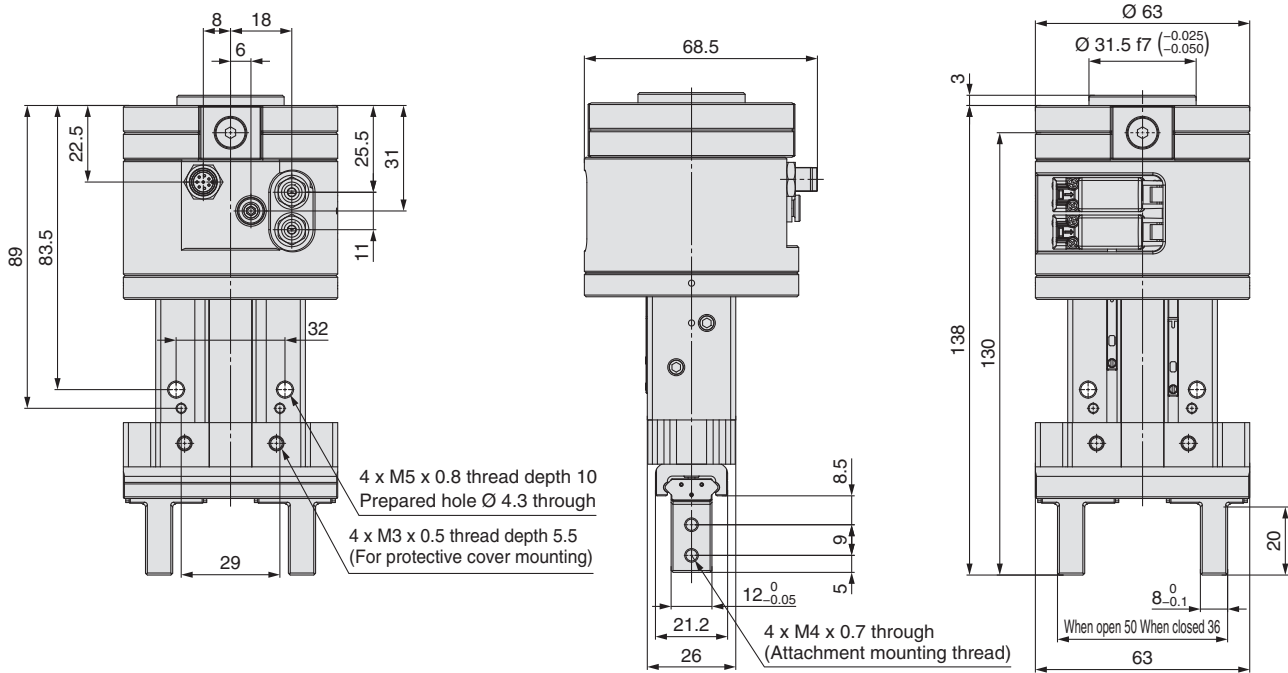
*3 When KUKA is used, a 3-port solenoid valve is available as a special order.

*4 Refer to page 45 for the shape and dimensions.

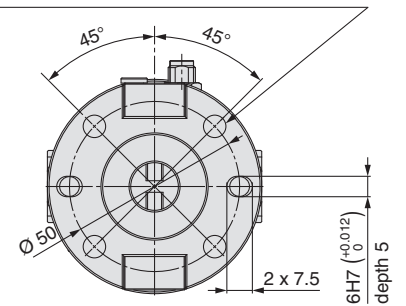
RMHZ2 Series

Dimensions/Clamp Type

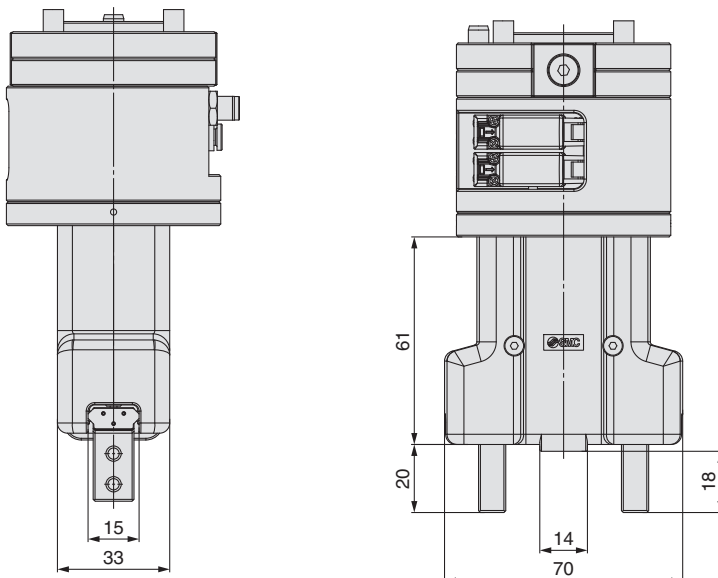
* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.



Main plate mounting bolt hole (4 locations) for M6

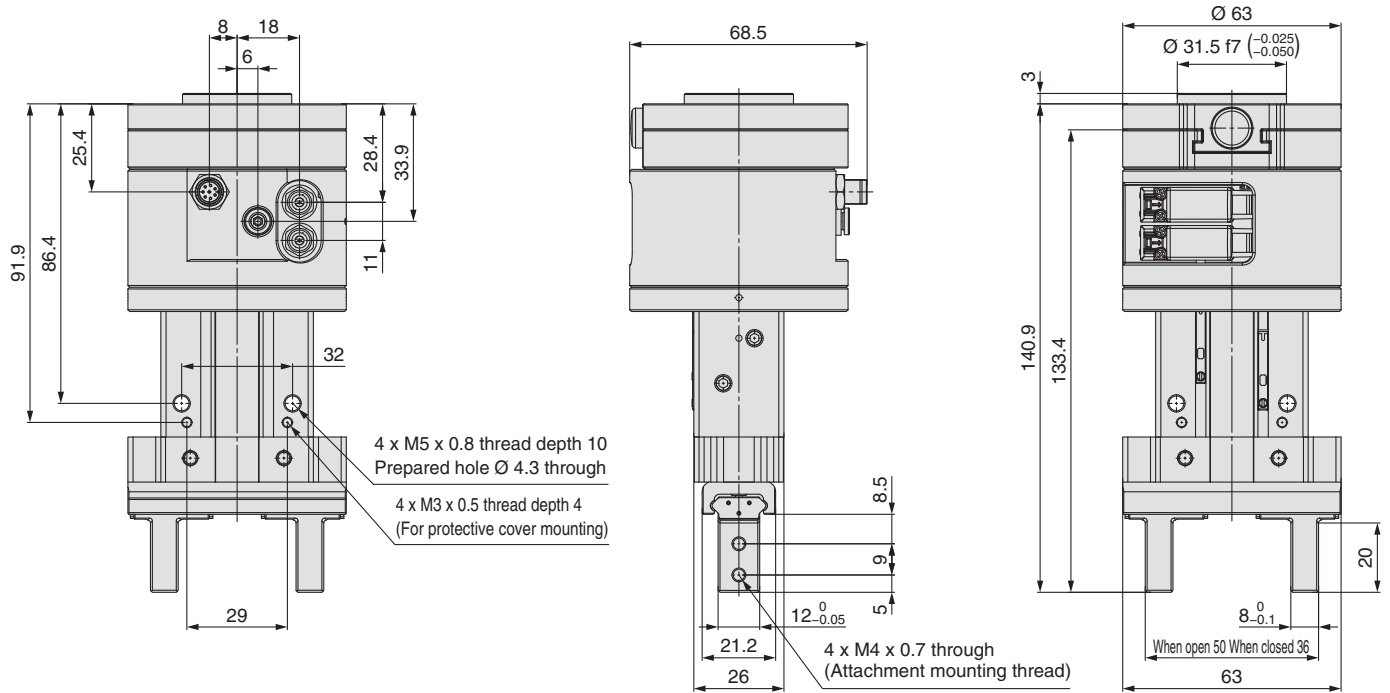


With protective cover mounted

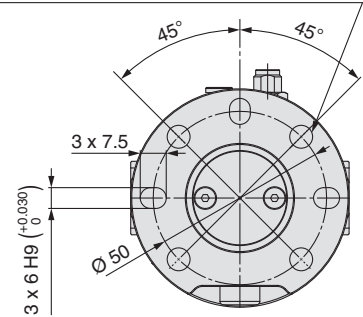


Dimensions/One-push Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.



Main plate mounting bolt hole (4 locations) for M6



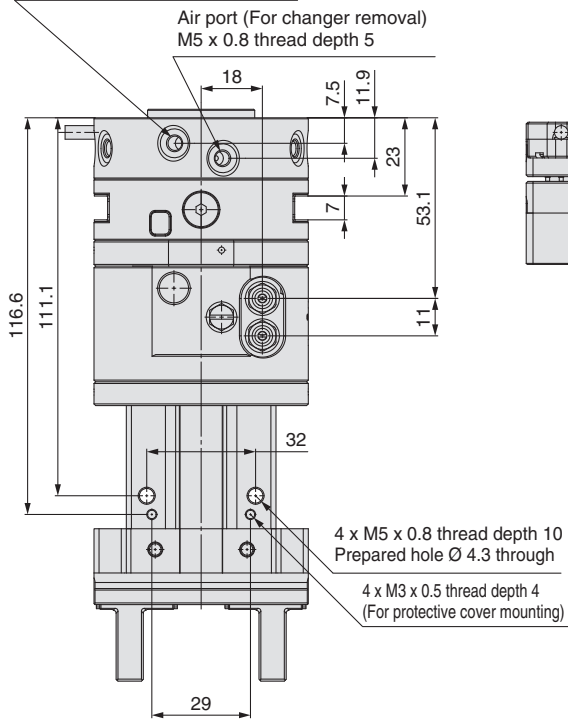
* Refer to page 21 for the detailed dimensions of the type with a protective cover.

RMHZ2 Series

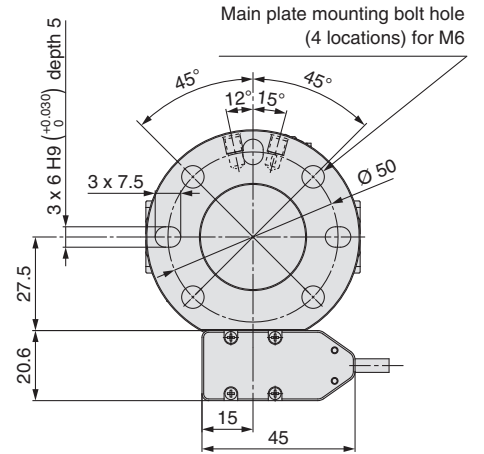
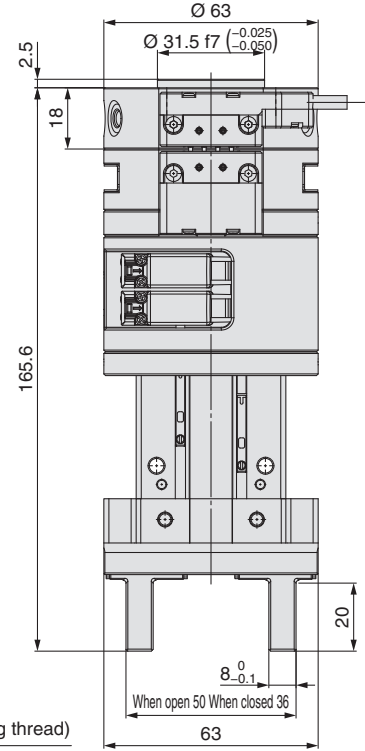
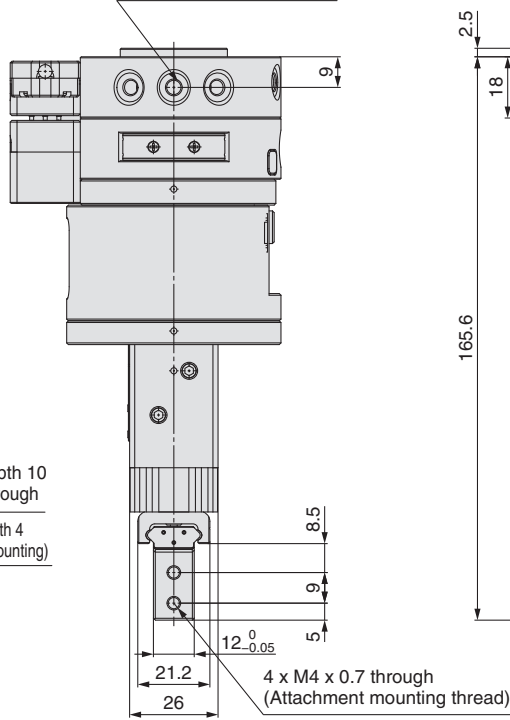
Dimensions/Auto Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.

Air port (For changer connection)
M5 x 0.8 thread depth 5



Air supply port for gripper
M5 x 0.8 thread depth 5



* Refer to page 21 for the detailed dimensions of the type with a protective cover.



RMHZ2 Series

Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For air gripper, auto switch, and fittings and tubing precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smc.eu>

Operating Environment

⚠ Caution

Use caution for the anti-corrosiveness of the linear guide unit.

Martensitic stainless steel is used for the finger guide. However, the anti-corrosiveness of this steel is inferior to that of austenitic stainless steel. In particular, rust may be generated in environments where waterdrops are likely to adhere to the product due to condensation, etc.

How to Use Body Tapped Holes

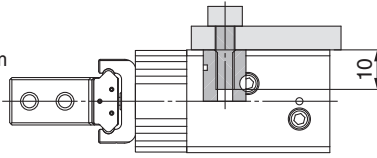
1. Do not scratch or dent the air gripper by dropping or bumping it when mounting.

Even a slight deformation can cause inaccuracy or malfunction.

Body tapped hole

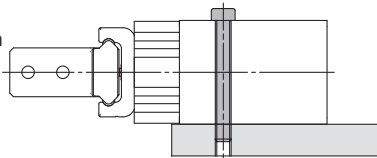
● Body tapped

Applicable bolt: M5 x 0.8
Tightening torque: 2.7 to 3.3 N·m
Max. screw-in depth: 10 mm



● Body through-holes

Applicable bolt: M4 x 0.7
Tightening torque: 1.35 to 1.65 N·m



Handling

⚠ Caution

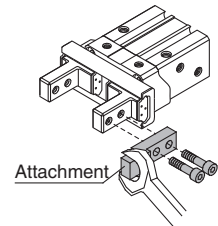
Finite orbit type guide is used in the actuator finger part. By using this, when there are inertial force which cause by movements or rotation to the actuator, steel ball will move to one side and this will cause a large resistance and degrade the accuracy. When there are inertial force which cause by movements or rotation to the actuator, operate the finger to full stroke.

How to Mount Attachments

1. Tighten the screw within the specified torque range when mounting the attachment.

Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping.

Make sure to mount the attachments on fingers with the tightening torque in the table below by using bolts, etc., for the female threads on fingers.



Applicable bolt	Tightening torque [N·m]
M4 x 0.7	1.35 to 1.65

Air Gripper for Collaborative Robots 3-Finger Type

RMHS3 Series



How to Order

RMHS3-40D- NO-NDE

1
2
3
4
5
6

1 Compatible robot

The symbols are shown in "Table 1 Compatible Robot List."

2 Switch selection

N	Auto switch (NPN)
P	Auto switch (PNP)

4 Connector cable

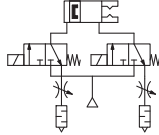
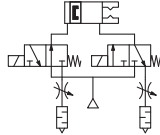
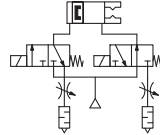
—	With connector cable
N	Without connection cable

* Only "N" is available for the auto type mounting interface.

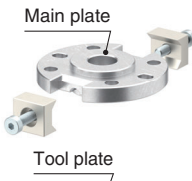


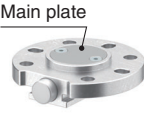


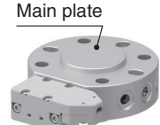


5 Protective cover

—	Without protective cover	
D	With protective cover	

3 Valve option

—	O	C
Basic type	Normally open	Normally closed
		

6 Mounting interface/Tool changer

Symbol	With main plate	Symbol	Without main plate
E	Clamp type  Main plate  Tool plate	F	Clamp type  Tool plate
E1	One-push type  Main plate  Tool plate	F1	One-push type  Tool plate
E2	Auto type  Main plate  Tool plate	F2	Auto type  Tool plate

* The main plate is required to mount the gripper to the robot.
Customers who already have a main plate can select "Without main plate".
* The main plates are not interchangeable between different product types.



Table 1 Compatible Robot List

Symbol		Robot manufacturer	Supported model	Switch output	Valve polarity	Mounting interface			
Identification	Switch selection					Clamp	One-push	Auto	
011	P	UNIVERSAL ROBOTS	UR3e	PNP	-COM	○	○	○	
			UR5e						
			UR10e						
			UR16e						
021	N	OMRON/ TECHMAN ROBOT	TM□	NPN	+COM	○	○	○*1	
			TM□S						
031	N	Mitsubishi Electric	MELFA ASSISTA (RV-5AS-D)	NPN	+COM	○	○	—	
	P			PNP	-COM				
041	N	YASKAWA Electric	MOTOMAN-HC10	NPN	+COM	○	○	—	
	P			PNP	-COM				
042	N			MOTOMAN-HC10DT	NPN	+COM	○	○	—
	P				PNP	-COM			
043	N			MOTOMAN-HC10(S)DTP	NPN	+COM	○	○	○
	MOTOMAN-HC10(S)DTP	PNP	-COM						
	MOTOMAN-HC20(S)DTP								
051	P	FANUC	CRX-5iA	PNP	-COM	○	○	○	
			CRX-10iA(L)						
			CRX-20iA						
			CRX-30iA						
061	P	KUKA	LBR-iiwa (Media flange: I/O Pneumatic)	PNP	-COM	○	○	—	
071	P	Doosan Robotics	H2017	PNP	-COM	○	○	—	
			H2515						
			M0609						
			M0617						
			M1013						
			M1509						
081	P	SIASUN	SCR3	PNP	-COM	○	○	—	
			SCR5						
			GCR3-620						
			GCR5-910						
			GCR10-1300						
			GCR14-1400						
			GCR20-1100						
091	N	JAKA	JAKA Zu3	NPN	+COM	○	○	—	
			JAKA Zu5						
			JAKA Zu7						
			JAKA Zu12						
	P		JAKA Zu3	PNP	-COM				
			JAKA Zu5						
			JAKA Zu7						
			JAKA Zu12						
101	N	AUBO	AUBO-i3	NPN	+COM	○	○	—	
			AUBO-i5						
			AUBO-i10						
111	P	HAN'S ROBOT	E03	PNP	-COM	○	○	—	
			E05						
			E10						
121	P	ABB	Gofa	PNP	-COM	○	○	—	
141	N	DENSO WAVE	COBOTTA PRO 900	NPN	+COM	○	○	○	
			COBOTTA PRO 1300						
	P		COBOTTA PRO 900	PNP	-COM				
			COBOTTA PRO 1300						

*1 When using the tool holder on a robot with a camera, the tool holder will interfere with the camera, so be sure to use the extension flange (option).
(Refer to page 46 for details.)

* Please contact our nearest sales office for the compatibility with robots not listed in the compatible robot list.

RMHS3 Series

Specifications

Item		Specification	
Common	Standards	Compliant with ISO 9409-1-50-4-M6*1	
	Fluid	Air	
	Operating pressure	0.1 to 0.6 MPa	
	Ambient and fluid temperatures	-10 to 50 °C*2	
	Repeatability	±0.01 mm	
	Max. operating frequency	60 C.P.M.	
	Lubricant	Non-lube	
	Action	Double acting	
	Gripping force Effective value per finger	External	118 N*3
		Internal	130 N*3
	Opening/Closing stroke (Both sides)	8 mm	
	Weight	Clamp type	776 g*4
		One-push type	783 g*4
		Auto type	1086 g*4
	Connector type	M8, 8-pin (Plug)	
Air pressure supply (P) port	One-touch fitting (Ø 4)		
Power supply voltage	24 VDC ±10 %*2		
Solenoid valve	Model	V114/V124	
Auto switch	Model	D-M9N/D-M9P	
Exhaust throttle valve	Model	ASN2-M5-X937	

*1 Robots whose end effector mounting standard differs are equipped with a dedicated mounting flange. (Refer to pages 45 and 46.)

*2 Only when the compatible robot is KUKA's LBR-iiwa, the power supply voltage is 24 VDC (-15 %/+20 %) and the max. operating temperature is 40 °C.

*3 These are values at the stroke centre when the pressure is 0.5 MPa and the gripping point distance L is 30 mm.

*4 This is the value excluding the weights of the protective cover and connector cable.

Valve Specifications

Operating temperature	-10 to 50 °C (40 °C*1) No freezing
Manual override	Non-locking push type
Mounting orientation	Unrestricted (Based on gripper mounting orientation)
Enclosure	Dust-protected

*1 For robot identification symbol 061P

Solenoid Specifications

Coil rated voltage	24 VDC
Allowable voltage fluctuation	-10 to +10 % (-15 % to +20 %*1)
Power consumption	0.4 W (0.55 W*1)
Surge voltage suppressor	Varistor

*1 For robot identification symbol 061P

Auto Switch Specifications

Output type	NPN/PNP (Depends on the robots)
Power supply voltage	24 VDC
Current consumption	10 mA or less
Load voltage	28 VDC or less (NPN)
Load current	40 mA or less
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)
Leakage current	100 µA or less at 24 VDC

Refer to page 13 for more information on model selection using the effective "gripping force" and "gripping point."

Tool Changer/Auto Type Specifications

Operating pressure range	0.4 to 0.7 MPa
Withstand pressure	1.05 MPa
Repeatability (Position reproducibility)	±0.01 mm
Recommended clearance before coupling	1 mm

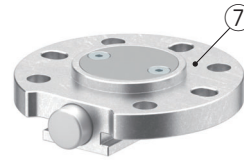
* For details, refer to the auto type tool changer in the **Web Catalogue**.

Component Parts

Clamp Type



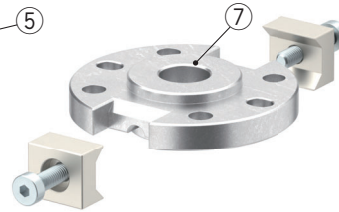
One-push Type



Auto Type



Clamp Type



No.	Description
1	Gripper
2	3-port solenoid valve
3	Exhaust throttle valve with silencer
4	One-touch fitting
5	Protective cover
6	Auto switch
7	Main plate

Replacement Parts

Description		Order number	Included parts	
Gripper assembly		RMH-A26-01	①	
Protective cover assembly		RMH-A26-08	⑤, Mounting screw	
Dedicated flange	Mitsubishi Electric: 031N, 031P	JMHZ-A16-X7400-BRK-01	Dedicated flange*4, Mounting bolt	
	YASKAWA Electric: 041N, 041P	JMHZ-A16-X7400-BRK-02	Dedicated flange*4, Mounting bolt	
	YASKAWA Electric: 042N, 042P	JMHZ-A16-X7400-BRK-03		
Auto switch assembly*1	PNP	RMH-A00-05-P	⑥	
	NPN	RMH-A00-05-N		
3-port solenoid valve	Normally open*2	V124-5MOU	②	
	Normally closed	V114-5MOU		
	KUKA: 061P	Normally open*2, *3		V114-5MOU-X647
		Normally closed*3		V124-5MOU-X647
Main plate assembly (Clamp type)	Other than the following	RMH-A00-09-A	⑦	
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N	RMH-A00-09-B		
	JAKA: 091N/091P ABB: 121P	RMH-A00-09-C		
Main plate (One-push type)	Other than the following	RMTM1-M1-X101	⑦	
	DOOSAN ROBOTICS: 071P SIASUN: 081P AUBO: 101N	RMTM1-M1-X101B		
	JAKA: 091N/091P ABB: 121P	RMTM1-M1-X101C		
Main plate (Auto type)	UNIVERSAL ROBOTS: 011P YASKAWA Electric: 043N/043P FANUC: 051P DENSO WAVE: 141P/141N	RMTA1-10M1-C3	⑦	
	OMRON/ TECHMAN ROBOT: 021N	RMTA1-10M1-C4		
Connector cable		Refer to page 42.		
Piping plate assembly*2		RMH-A00-06	Piping plate, Mounting bolt, O-ring	
One-touch fitting		KQ2S04-M5N	④	
Exhaust throttle valve with silencer		ASN2-M5-X937	③	

*1 An auto switch assembly is an assembly part in which 2 auto switches are integrated into one part. When replacing an auto switch, replacement is conducted in units of auto switch assembly. An individual auto switch cannot be replaced.

*2 When installing a normally-open valve, a piping plate assembly is necessary. For details, refer to the operation manual.

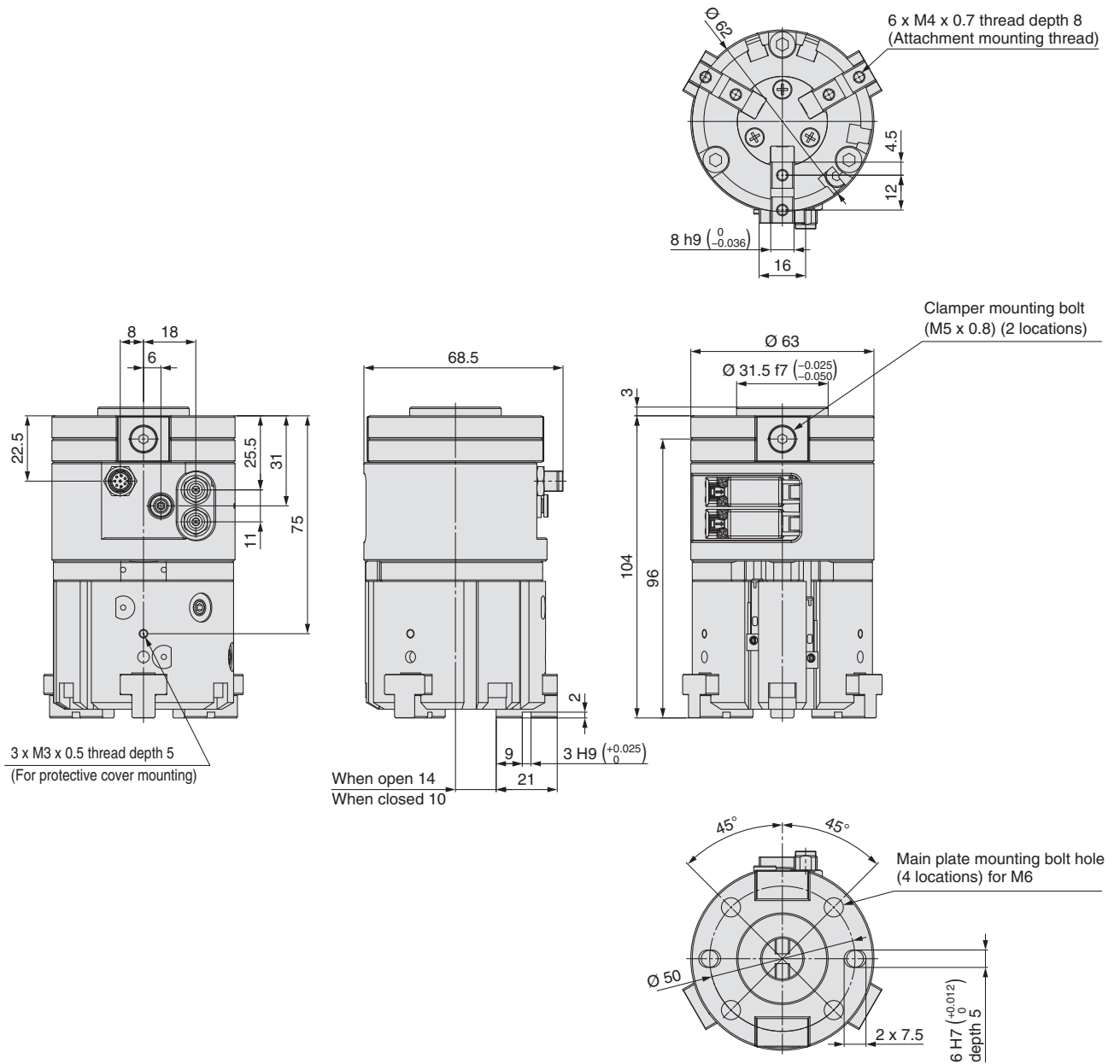
*3 When KUKA is used, a 3-port solenoid valve is available as a special order.

*4 Refer to page 45 for the shape and dimensions.

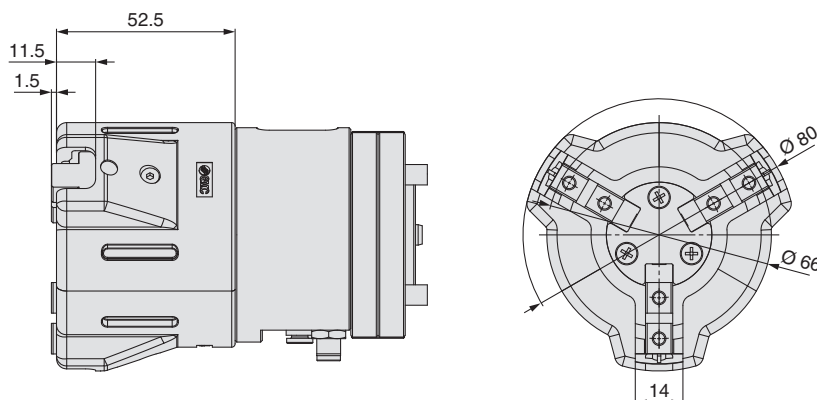
RMHS3 Series

Dimensions/Clamp Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting.
For details, refer to page 45.

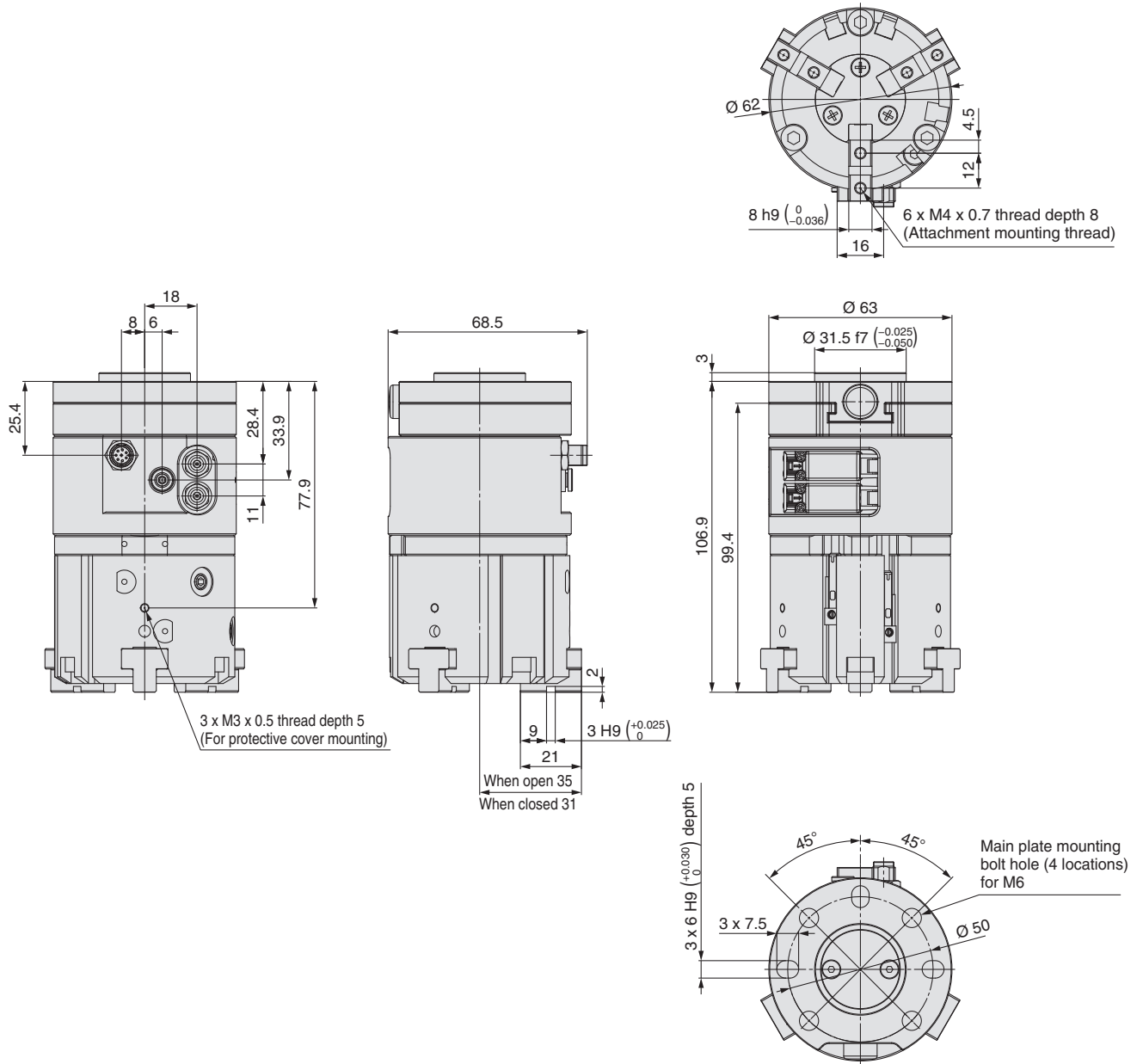


With protective cover mounted



Dimensions/One-push Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting.
For details, refer to page 45.

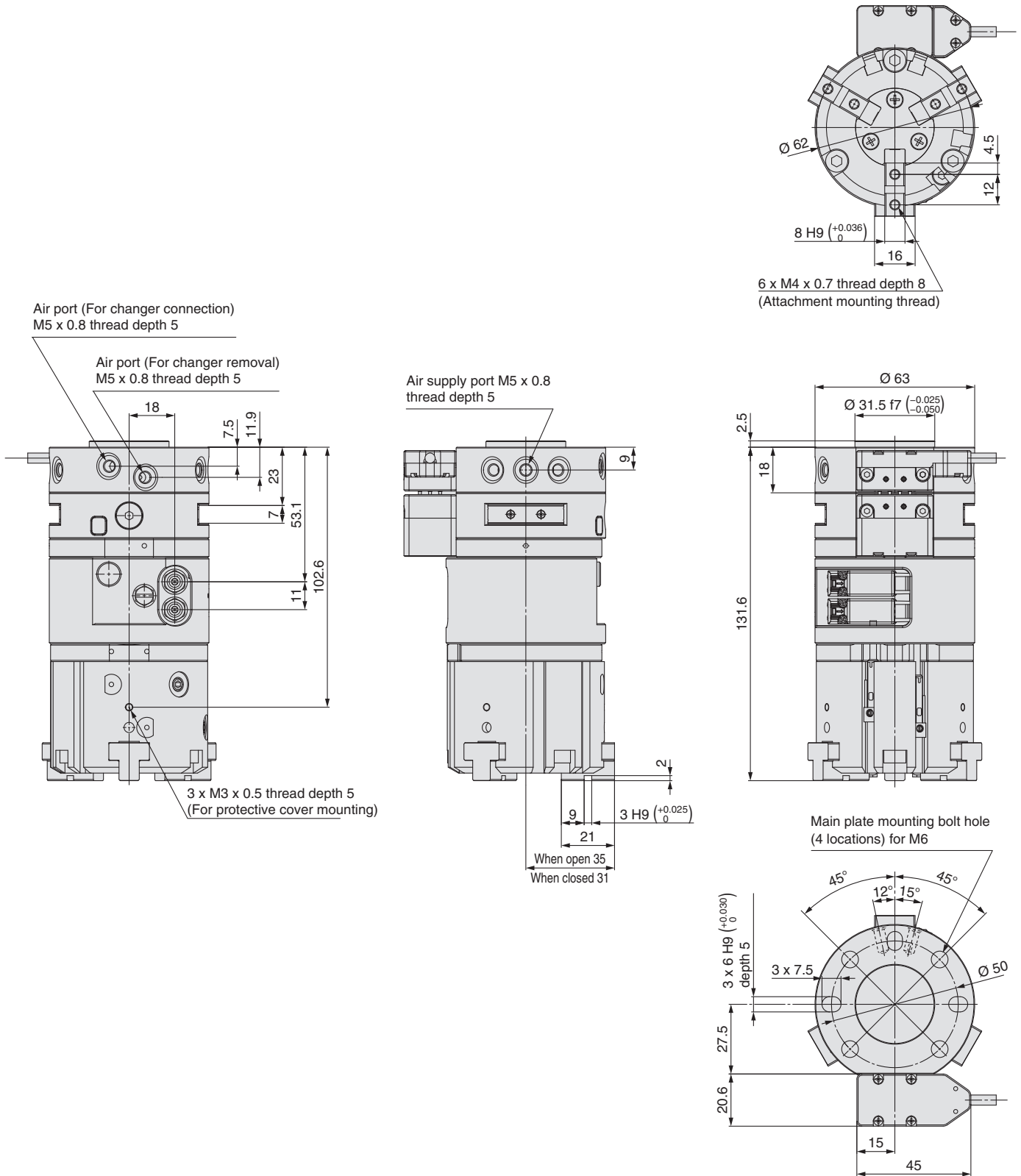


* Refer to page 29 for the detailed dimensions of the type with a protective cover.

RMHS3 Series

Dimensions/Auto Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting.
For details, refer to page 45.



* Refer to page 29 for the detailed dimensions of the type with a protective cover.



RMHS3 Series

Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For air gripper, auto switch, and fittings and tubing precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smc.eu>

How to Mount Attachments

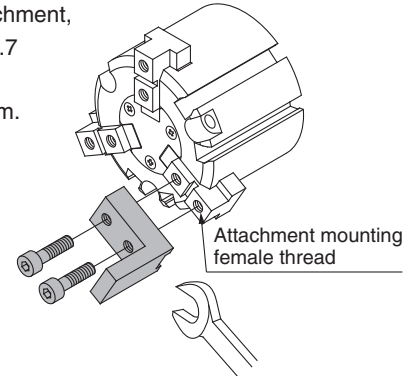
1. Do not scratch or dent the air gripper by dropping or bumping it when mounting.

Even a slight deformation can cause inaccuracy or malfunction.

2. Tighten the screw within the specified torque range when mounting the attachment.

Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping.

When mounting the attachment, make sure to use M4 x 0.7 screws and a tightening torque of 1.35 to 1.65 N·m.



Air Gripper for Collaborative Robots Long Stroke Type

RMHF2 Series



How to Order

RMHF2-16D2- NO-NDE

1
2
3
4
5
6

1 Compatible robot

The symbols are shown in "Table 1 Compatible Robot List."

2 Switch selection



N	Auto switch (NPN)
P	Auto switch (PNP)
A	Actuator position sensor (D-MP)

4 Connector cable

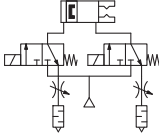
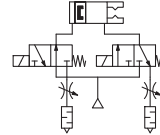
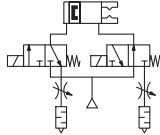
—	With connector cable
N	Without connection cable

* Only "N" is available for the auto type mounting interface.

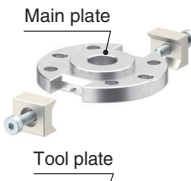





5 Protective cover

—	Without protective cover	
D	With protective cover	

3 Valve option

—	O	C
Basic type	Normally open	Normally closed
		

6 Mounting interface/Tool changer

Symbol	With main plate	Symbol	Without main plate
E	Clamp type 	F	Clamp type 
E1	One-push type 	F1	One-push type 
E2	Auto type 	F2	Auto type 

* The main plate is required to mount the gripper to the robot.
Customers who already have a main plate can select "Without main plate".
* The main plates are not interchangeable between different product types.

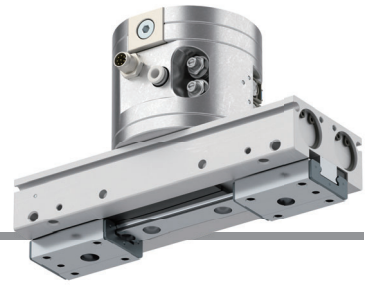


Table 1 Compatible Robot List

Symbol		Robot manufacturer	Supported model	Switch output	Valve polarity	Mounting interface		
Identification	Switch selection					Clamp	One-push	Auto
011	A	UNIVERSAL ROBOTS	UR3e	Analog	-COM	○	○	○
			UR5e					
			UR10e					
			UR16e					
011	P	UNIVERSAL ROBOTS	UR3e	PNP	-COM	○	○	○
			UR5e					
			UR10e					
			UR16e					
021	N	OMRON/ TECHMAN ROBOT	TM□	NPN	+COM	○*1	○	○*2
			TM□S					
031	N	Mitsubishi Electric	MELFA ASSISTA (RV-5AS-D)	NPN	+COM	○	○	—
				PNP	-COM			
041	N	YASKAWA Electric	MOTOMAN-HC10	NPN	+COM	○	○	—
				PNP	-COM			
042	N	YASKAWA Electric	MOTOMAN-HC10DT	NPN	+COM	○	○	—
				PNP	-COM			
043	N	YASKAWA Electric	MOTOMAN-HC10(S)DTP	NPN	+COM	○	○	○
			MOTOMAN-HC20(S)DTP					
	MOTOMAN-HC10(S)DTP		PNP	-COM				
	MOTOMAN-HC20(S)DTP							
051	A	FANUC	CRX-5iA	Analog	-COM	○	○	○
			CRX-10iA(L)					
			CRX-20iA					
			CRX-30iA					
051	P	FANUC	CRX-5iA	PNP	-COM	○	○	○
			CRX-10iA(L)					
			CRX-20iA					
			CRX-30iA					
061	P	KUKA	LBR-iiwa (Media flange: I/O Pneumatic)	PNP	-COM	○	○	—
071	P	Doosan Robotics	H2017	PNP	-COM	○	○	—
			H2515					
			M0609					
			M0617					
			M1013					
			M1509					
081	P	SIASUN	SCR3	PNP	-COM	○	○	—
			SCR5					
			GCR3-620					
			GCR5-910					
			GCR10-1300					
			GCR14-1400					
			GCR20-1100					
			JAKA Zu3					
JAKA Zu5								
JAKA Zu7								
JAKA Zu12								
091	P	JAKA	JAKA Zu3	PNP	-COM			
			JAKA Zu5					
			JAKA Zu7					
			JAKA Zu12					
101	N	AUBO	AUBO-i3	NPN	+COM	○	○	—
			AUBO-i5					
			AUBO-i10					
111	P	HAN'S ROBOT	E03	PNP	-COM	○	○	—
			E05					
			E10					
121	P	ABB	Gofa	PNP	-COM	○	○	—
141	A	DENSO WAVE	COBOTTA PRO 900	Analog	-COM	○	○	○
			COBOTTA PRO 1300					
	COBOTTA PRO 900		NPN	+COM				
	COBOTTA PRO 1300							
	P		COBOTTA PRO 900	PNP	-COM			
COBOTTA PRO 1300								

*1 When using a robot with a camera, a short neck hex wrench is required to attach or remove the product.

*2 When using the tool holder on a robot with a camera, the tool holder will interfere with the camera, so be sure to use the extension flange (option). (Refer to page 46 for details.)

* Please contact our nearest sales office for the compatibility with robots not listed in the compatible robot list.

RMHF2 Series

Specifications

Item		Specification	
Common	Standards	Compliant with ISO 9409-1-50-4-M6*1	
	Fluid	Air	
	Operating pressure	0.1 to 0.7 MPa	
	Ambient and fluid temperatures	-10 to 50 °C*2	
	Repeatability	±0.05 mm	
	Max. operating frequency	60 C.P.M.*5	
	Lubricant	Non-lube	
	Action	Double acting	
	Gripping force	90 N*3	
	Effective value per finger	Internal 90 N*3	
	Opening/Closing stroke (Both sides)	64 mm	
	Weight	Clamp type	945 g (960 g)*4
		One-push type	952 g (967 g)*4
		Auto type	1255 g (1270 g)*4
Connector type	M8, 8-pin (Plug)		
Air pressure supply (P) port	One-touch fitting (Ø 4)		
Power supply voltage	24 VDC ±10 %*2		
Solenoid valve	Model	V114/V124	
Auto switch	Model	D-M9N/D-M9P	
Position sensor	Model	D-MP	
Exhaust throttle valve	Model	ASN2-M5-X937	

- *1 Robots whose end effector mounting standard differs are equipped with a dedicated mounting flange. (Refer to pages 45 and 46.)
- *2 Only when the compatible robot is KUKA's LBR-iiwa, the power supply voltage is 24 VDC (-15 %/+20 %) and the max. operating temperature is 40 °C.
- *3 These are values at the stroke centre when the pressure is 0.5 MPa and the gripping point distance L is 20 mm.
- *4 This is the value excluding the weights of the protective cover and connector cable. The values in brackets are for when the actuator position sensor (D-MP) is selected.
- *5 Normally open (N.O.) and normally closed (N.C.) specifications are 50 C.P.M.

Valve Specifications

Operating temperature	-10 to 50 °C (40 °C*1) No freezing
Manual override	Non-locking push type
Mounting orientation	Unrestricted (Based on gripper mounting orientation)
Enclosure	Dust-protected

- *1 For robot identification symbol 061P

Solenoid Specifications

Coil rated voltage	24 VDC
Allowable voltage fluctuation	-10 to +10 % (-15 % to +20 %*1)
Power consumption	0.4 W (0.55 W*1)
Surge voltage suppressor	Varistor

- *1 For robot identification symbol 061P

Auto Switch Specifications

Output type	NPN/PNP (Depends on the robots)
Power supply voltage	24 VDC
Current consumption	10 mA or less
Load voltage	28 VDC or less (NPN)
Load current	40 mA or less
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)
Leakage current	100 µA or less at 24 VDC

Refer to page 14 for more information on model selection using the effective "gripping force" and "gripping point."

Actuator Position Sensor

Model		D-MP050□
Power supply voltage	15 to 30 VDC, Ripple (p-p) 10 % or less (with power supply polarity protection)	
Current consumption	48 mA or less (when no load is applied)	
Repeatability*1	0.1 mm (Ambient temperature: 25 °C)	
Resolution	0.05 mm	
Linearity	±0.3 mm (Ambient temperature: 25 °C)	
Analogue voltage output	Output voltage	0 to 10 V
	Min. load resistance	2 kΩ

- *1 Repeatability of magnetic movement in one direction
- * For details on the actuator position sensor (D-MP series), refer to the operation manual on the SMC website.

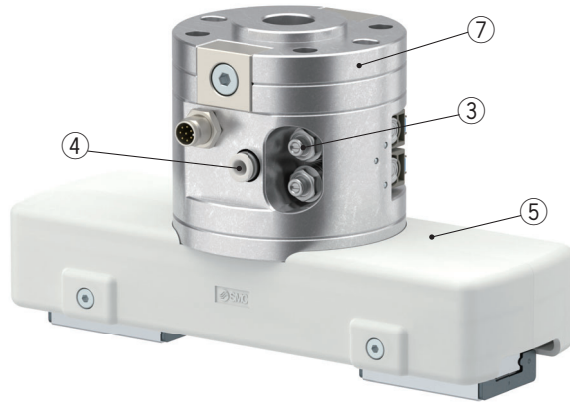
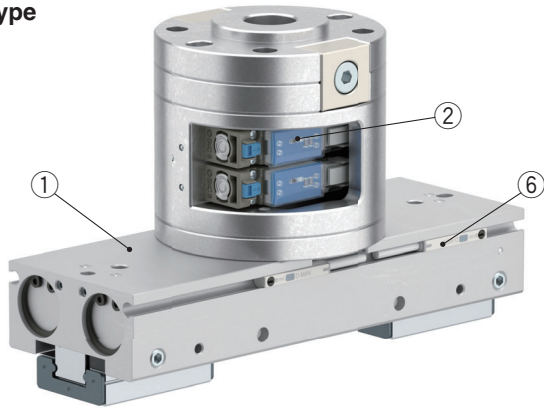
Tool Changer/Auto Type Specifications

Operating pressure range	0.4 to 0.7 MPa
Withstand pressure	1.05 MPa
Repeatability (Position reproducibility)	±0.01 mm
Recommended clearance before coupling	1 mm

- * For details, refer to the auto type tool changer in the **Web Catalogue**.

Component Parts

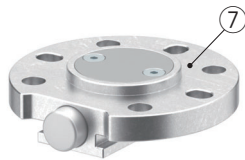
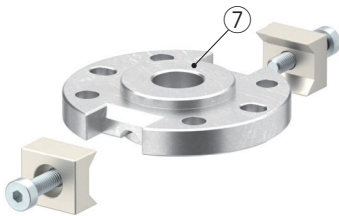
Clamp Type



Clamp Type

One-push Type

Auto Type



No.	Description
1	Gripper
2	3-port solenoid valve
3	Exhaust throttle valve with silencer
4	One-touch fitting
5	Protective cover
6	Auto switch
7	Main plate

Replacement Parts

Description	Order number	Included parts	
Gripper assembly	RMH-A32-01	①	
Protective cover assembly	RMH-A32-08	⑤, Mounting screw	
Dedicated flange	Mitsubishi Electric: 031N, 031P	JMHZ-A16-X7400-BRK-01	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 041N, 041P	JMHZ-A16-X7400-BRK-02	Dedicated flange*4, Mounting bolt
	YASKAWA Electric: 042N, 042P	JMHZ-A16-X7400-BRK-03	
Auto switch assembly*1	PNP	RMH-A00-05-P	⑥
	NPN	RMH-A00-05-N	
3-port solenoid valve	Normally open*2	V124-5MOU	②
	Normally closed	V114-5MOU	
	KUKA: Normally open*2, *3 061P	V114-5MOU-X647	
	Normally closed*3	V124-5MOU-X647	
Main plate assembly (Clamp type)	Other than the following	RMH-A00-09-A	⑦
	DOOSAN ROBOTICS: 071P	RMH-A00-09-B	
	SIASUN: 081P AUBO: 101N		
	JAKA: 091N/091P ABB: 121P	RMH-A00-09-C	
Main plate (One-push type)	Other than the following	RMTM1-M1-X101	⑦
	DOOSAN ROBOTICS: 071P	RMTM1-M1-X101B	
	SIASUN: 081P AUBO: 101N		
	JAKA: 091N/091P ABB: 121P	RMTM1-M1-X101C	
Main plate (Auto type)	UNIVERSAL ROBOTS: 011A/011P	RMTA1-10M1-C3	⑦
	YASKAWA Electric: 043N/043P		
	FANUC: 051A/051P		
	DENSO WAVE: 141A/141P/141N		
	OMRON/ TECHMAN ROBOT: 021N	RMTA1-10M1-C4	
	Connector cable	Refer to page 42.	
Piping plate assembly*2	RMH-A00-06	Piping plate, Mounting bolt, O-ring	
One-touch fitting	KQ2S04-M5N	④	
Exhaust throttle valve with silencer	ASN2-M5-X937	③	

*1 An auto switch assembly is an assembly part in which 2 auto switches are integrated into one part. When replacing an auto switch, replacement is conducted in units of auto switch assembly. An individual auto switch cannot be replaced.

*2 When installing a normally-open valve, a piping plate assembly is necessary. For details, refer to the operation manual.

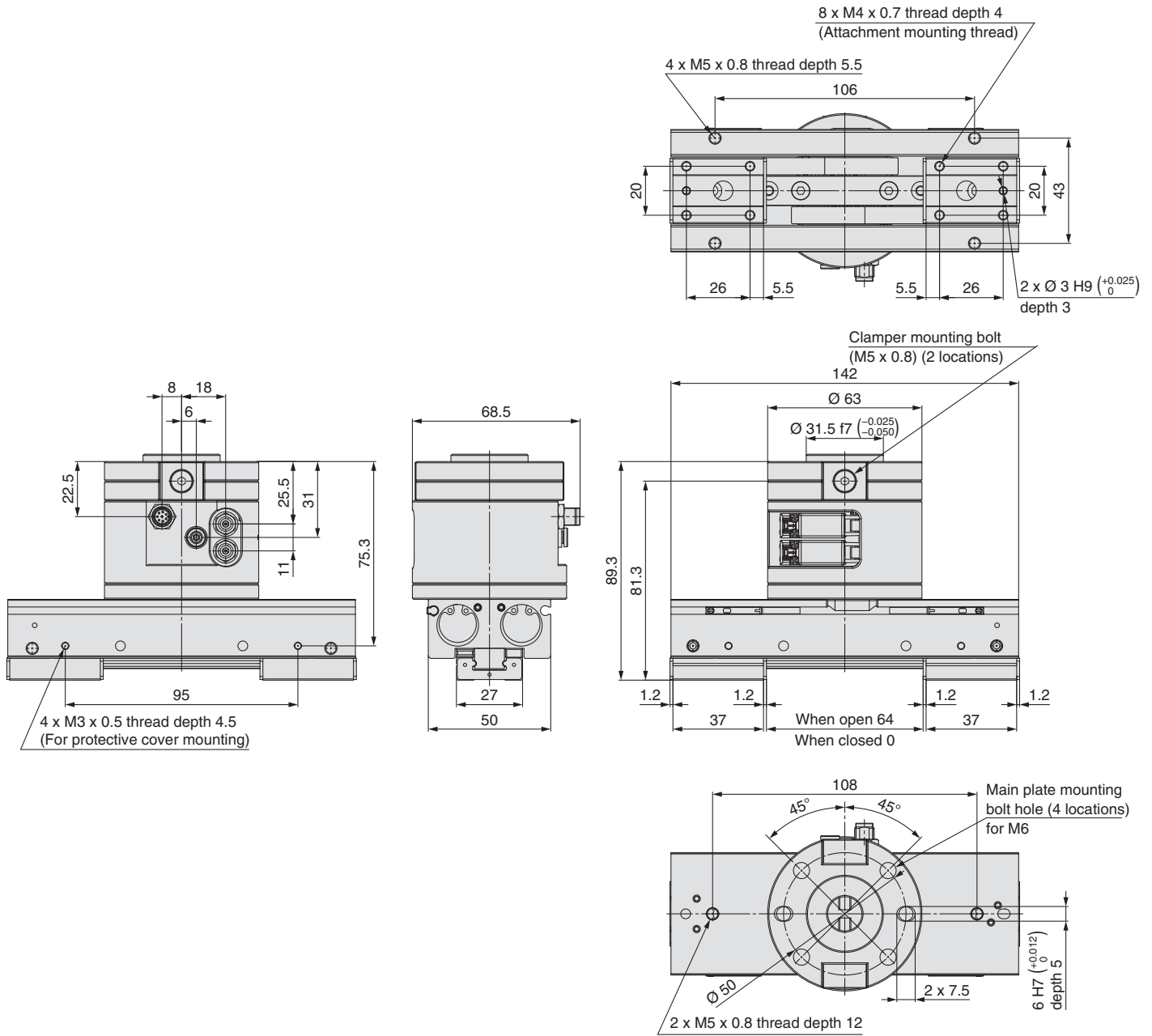
*3 When KUKA is used, a 3-port solenoid valve is available as a special order.

*4 Refer to page 45 for the shape and dimensions.

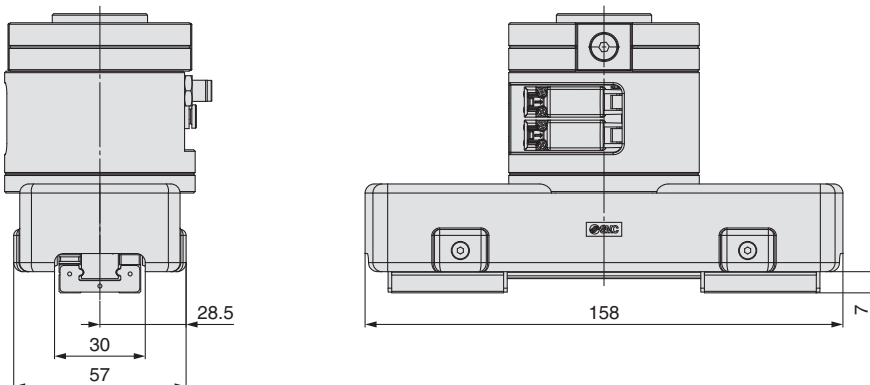
RMHF2 Series

Dimensions/Clamp Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.

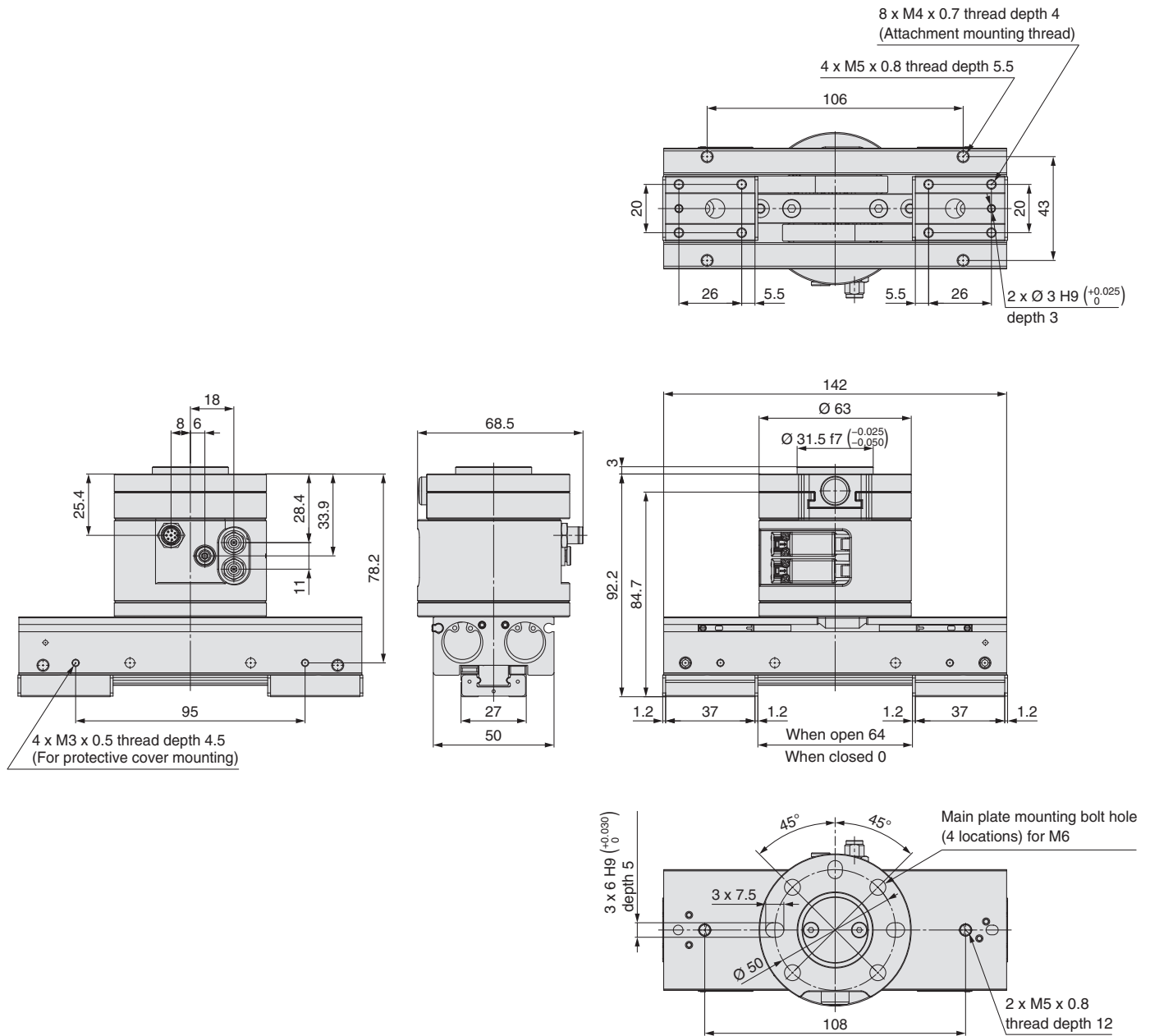


With protective cover mounted



Dimensions/One-push Type

* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting. For details, refer to page 45.

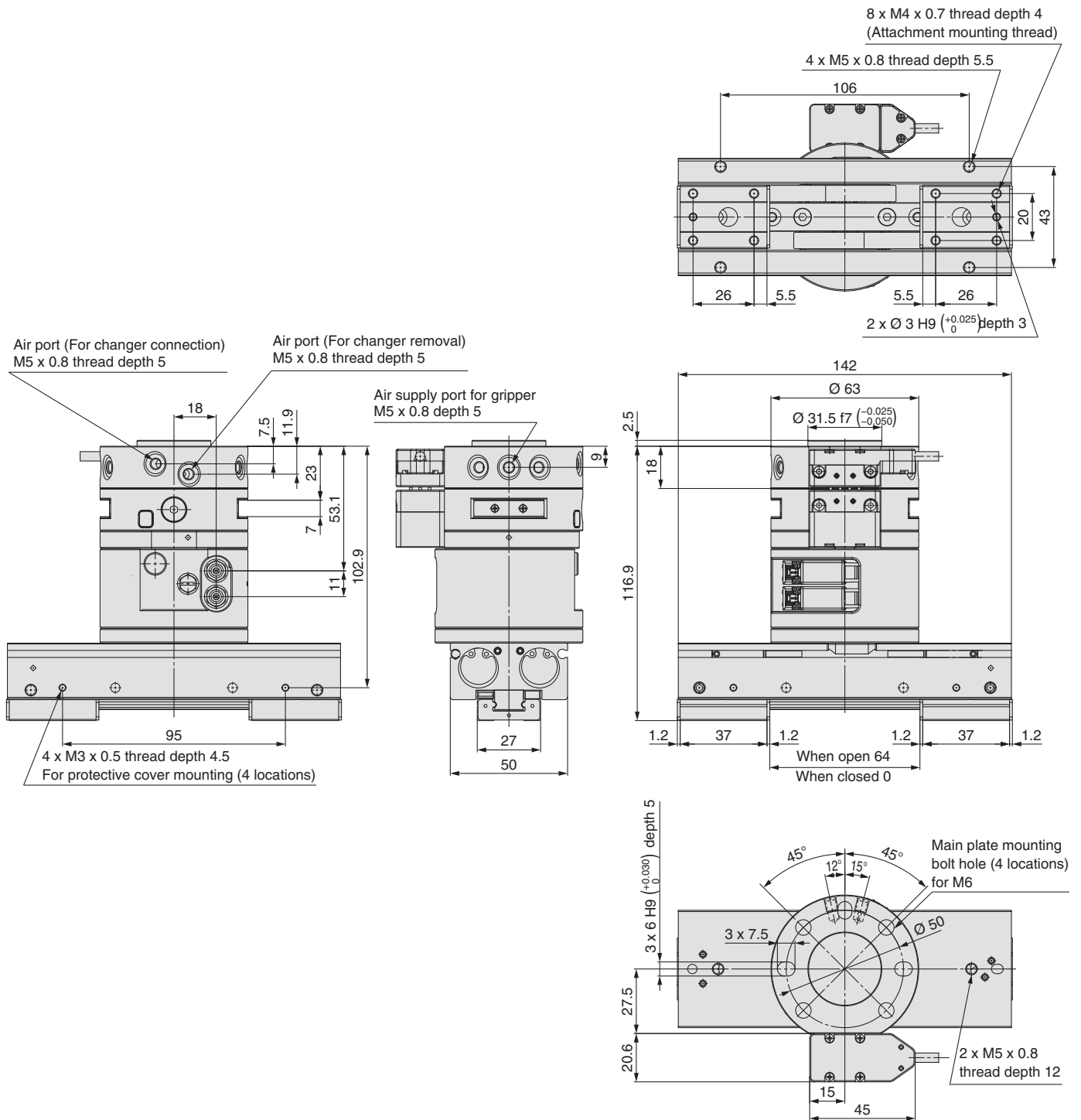


* Refer to page 37 for the detailed dimensions of the type with a protective cover.

RMHF2 Series

Dimensions/Auto Type

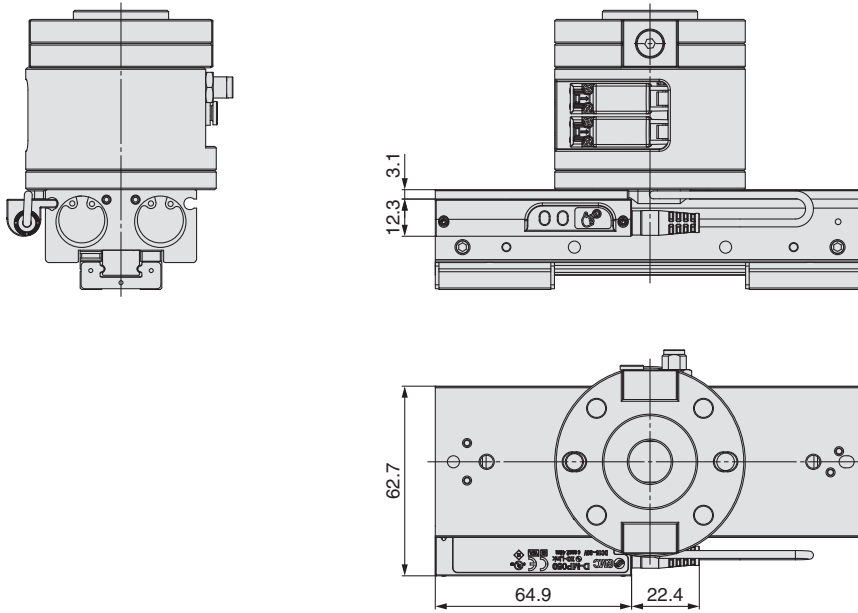
* For Mitsubishi Electric Corporation and YASKAWA Electric Corporation collaborative robots, a dedicated flange is required for mounting.
For details, refer to page 45.



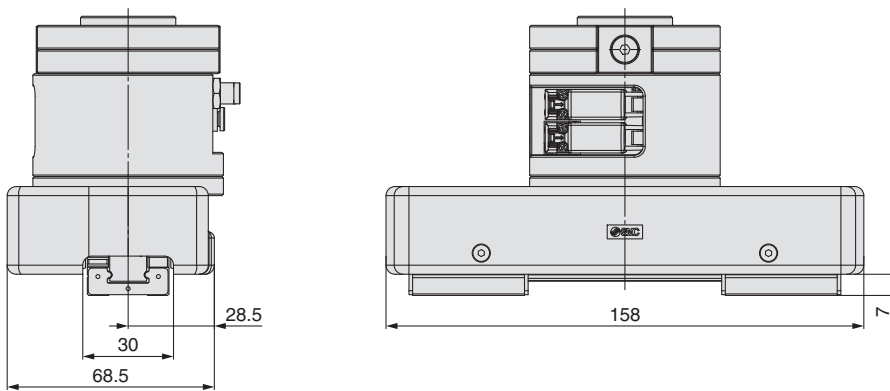
* Refer to page 37 for the detailed dimensions of the type with a protective cover.

Dimensions: With Actuator Position Sensor

* Dimensions other than those shown below are the same as those shown on page 37.



With protective cover mounted





RMHF2 Series

Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For air gripper, auto switch, and fittings and tubing precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: <https://www.smc.eu>

How to Use Body Tapped Holes

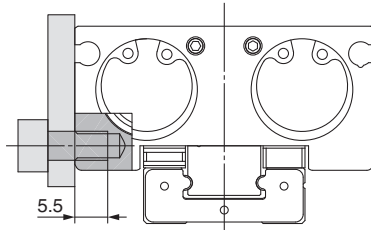
1. Do not scratch or dent the air gripper by dropping or bumping it when mounting.

Even a slight deformation can cause inaccuracy or malfunction.

Body tapped hole

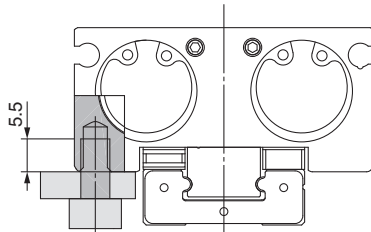
● Lateral mounting (Body tapped)

Applicable bolt: M5 x 0.8
Tightening torque: 2.7 to 3.3 N·m
Max. screw-in depth: 5.5 mm



● Bottom mounting (Body tapped)

Applicable bolt: M5 x 0.8
Tightening torque: 2.7 to 3.3 N·m
Max. screw-in depth: 5.5 mm



Handling

⚠ Caution

Finite orbit type guide is used in the actuator finger part. By using this, when there are inertial force which cause by movements or rotation to the actuator, steel ball will move to one side and this will cause a large resistance and degrade the accuracy. When there are inertial force which cause by movements or rotation to the actuator, operate the finger to full stroke.

Operating Environment

⚠ Caution

Use caution for the anti-corrosiveness of the linear guide unit.

Martensitic stainless steel is used for the finger guide rail. However, the anti-corrosiveness of this steel is inferior to that of austenitic stainless steel. In particular, rust may be generated in environments where water droplets are likely to adhere due to condensation, etc.

How to Mount Attachments

1. Tighten the screw within the specified torque range when mounting the attachment.

Tightening with a torque above the limit can cause malfunction, while insufficient tightening can cause slippage and dropping.

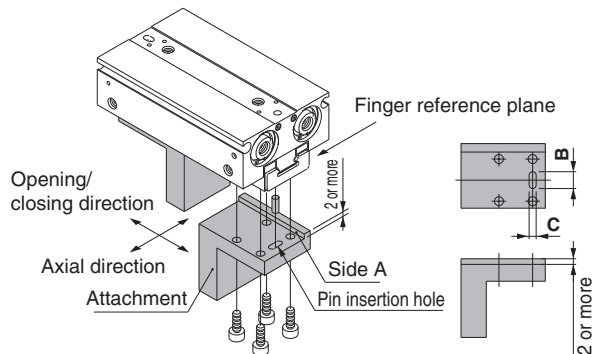
● Positioning in the finger's open/close direction

Position the finger and the attachment by inserting the finger's pin into the attachment's pin insertion hole.

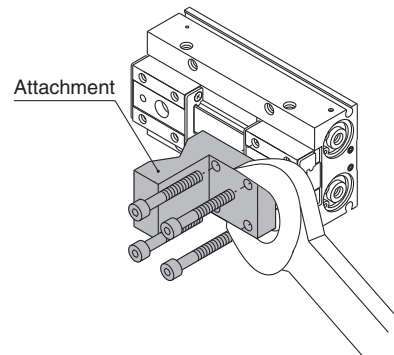
Provide the following pin insertion hole dimensions: shaft-basis fitting dimension **C** for the open/close direction; slotted hole with relief **B** for the axial direction.

● Positioning in the finger's axial direction

Perform the positioning from the reference plane of the finger and the side A of the attachment.

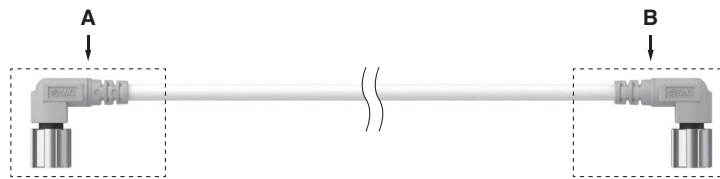


Make sure to mount the attachments on fingers with a tightening torque of 1.35 to 1.65 N·m by using M4 x 0.7 bolts, etc., for the female threads on fingers.



RMH□ Series Options

Connector Cable



Identification symbol	Robot manufacturer	A Air gripper side	B Robot side	Part no.			
011P, 011A	UNIVERSAL ROBOTS	M8 8-pin connector (Socket)	M8 8-pin connector (Socket)	RMH-A00-11-A			
021N	OMRON/TECHMAN ROBOT		M8 8-pin connector (Plug)	RMH-A00-11-B			
031N	Mitsubishi Electric		M8 8-pin connector (Socket)	M12 8-pin connector (Plug)	RMH-A00-11-C		
031P				51227-0800 made by MOLEX	MH-7400-ADP-D-01		
041N	YASKAWA Electric					M8 8-pin connector (Socket)	RMH-A00-11-A
041P							
042N							
042P							
043N	FANUC					M8 8-pin connector (Socket)	RMH-A00-11-A
043P				M8 8-pin connector (Socket)	RMH-A00-11-A		
051P, 051A	KUKA			M8 8-pin connector (Plug)	RMH-A00-11-B		
061P	DOOSAN ROBOTICS			M8 8-pin connector (Socket)	RMH-A00-11-B		
071P	SIASUN			M8 8-pin connector (Socket)	RMH-A00-11-A		
081P	JAKA			M8 8-pin connector (Plug)	RMH-A00-11-B		
091N	AUBO			M8 8-pin connector (Socket)	RMH-A00-11-A		
091P							
101N	HAN'S ROBOT			M12 12-pin connector (Plug)	RMH-A00-11-D		
101P	ABB			M8 3-pin, M8 4-pin connector (Plug)	RMH-A00-11-E		
111P	DENSO WAVE			M8 8-pin connector (Socket)	M8 8-pin connector (Socket)	RMH-A00-11-A	
121P							
141N							
141P							

Tool holder

- The tool changer supports a work load range from 10 kg.
- Holder attachment confirmation can be detected with the auto switch.

How to Order



RMTA1-10S1A-M9N

● Tool changer work load

10	10 kg
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● Switch holder

—	None
A	With switch holder

● Auto switch type

—	Without auto switch
M9□	With auto switch

* For applicable auto switches, refer to the table below.

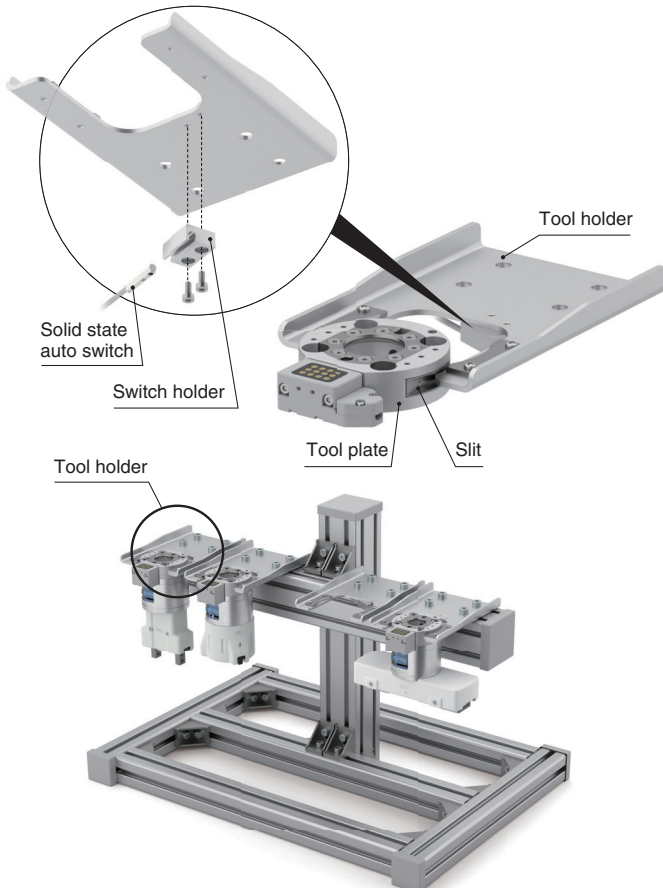
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length [m]				Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (—)	1 (M)	3 (L)	5 (Z)		IC circuit	Relay, PLC		
Solid state auto switch	Diagnostic indication (2-colour indicator)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
				M9PV				M9P	●	●	●	○	○				
				2-wire				5 V, 12 V	M9BV	M9B	●	●	●	○	○		—
				3-wire (NPN)					M9NWV	M9NW	●	●	●	○	○		IC circuit
				3-wire (PNP)					M9PWV	M9PW	●	●	●	○	○		—
				2-wire					M9BWV	M9BW	●	●	●	○	○		—

- * Solid state auto switches marked with a "○" are produced upon receipt of order.
- * Auto switches are shipped together with the product but do not come assembled.

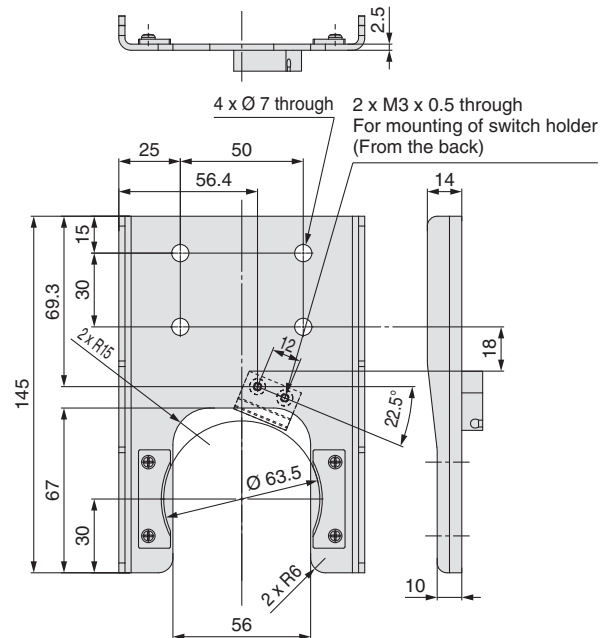
- * Lead wire length symbols: 0.5 m..... — (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWZ

Application Example

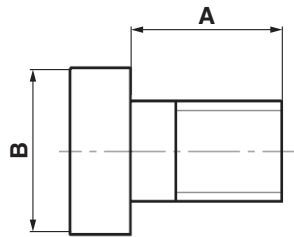
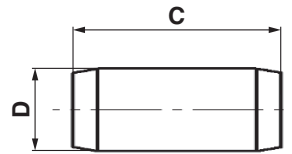
- The auto switch can detect whether there is a tool plate or not.



Dimensions



- * The base and stand need to be prepared by the user.

Replacement Parts**Main plate assembly mounting bolt****Positioning pin****Dimensions**

Part no.	Description	A	B	C	D
RMH-A00-14	Hexagon socket head cap screw	10	10	—	—
RMH-A00-15		8	10	—	—
RMH-A00-16	Positioning pin	—	—	10	6h8
RMH-A00-17		—	—	15	6h8

* Bolts and positioning pins for main plate assembly are included with the main plate assembly, but can be ordered in quantities of 1 or more by the part numbers listed below.

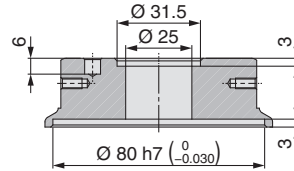
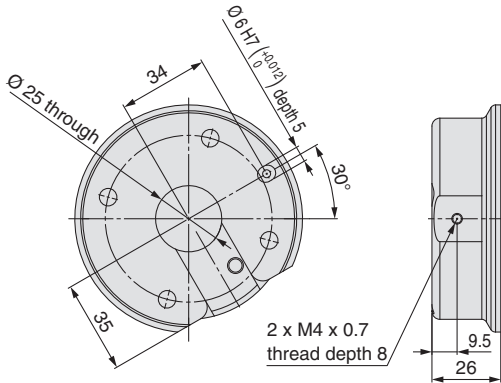
Compatible robot identification symbol	Hexagon socket thin head cap screw		Positioning pin	
	Part no.	Quantity	Part no.	Quantity
011	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
021	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
031	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
041	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
042	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
043	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
051	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
061	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
071	RMH-A00-15	4 pcs./unit	RMH-A00-16	1 pc./unit
081	RMH-A00-15	4 pcs./unit	RMH-A00-16	1 pc./unit
091	RMH-A00-14	4 pcs./unit	RMH-A00-17	1 pc./unit
101	RMH-A00-15	4 pcs./unit	RMH-A00-16	1 pc./unit
111	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit
121	RMH-A00-14	4 pcs./unit	RMH-A00-17	1 pc./unit
141	RMH-A00-14	4 pcs./unit	RMH-A00-16	1 pc./unit

Robot Manufacturer Dedicated Flanges

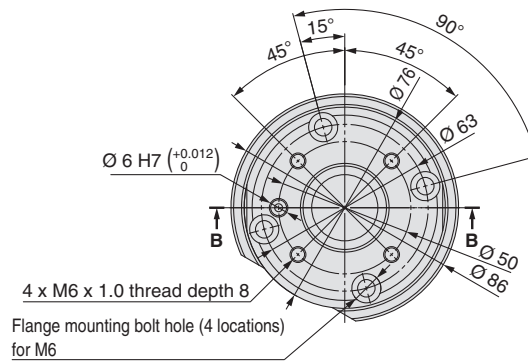
By selecting a robot identification symbol and the manual changer option "E" (With main plate assembly), a dedicated flange for the corresponding robot will be shipped with the product.

■ Flange for MOTOMAN-HC10 from YASKAWA Electric (Robot identification symbol: 041N, 041P)

Accessories	Quantity
Hexagon socket head cap screw (M4 x 8)	2 pcs.
Hexagon socket head cap screw (M6 x 12)	4 pcs.
Cross recessed resin round head screw (M4 x 6)	2 pcs.
Positioning pin (6 x 10)	1 pc.
Cable fixture	2 pcs.
Tie band	2 pcs.

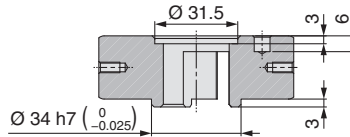
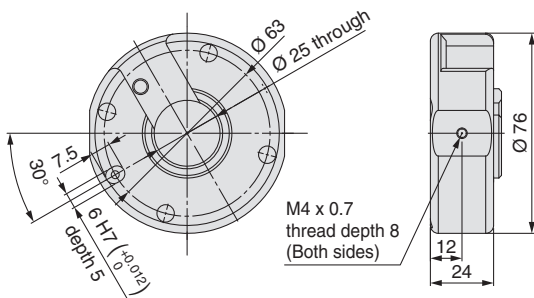


B-B (1:1)

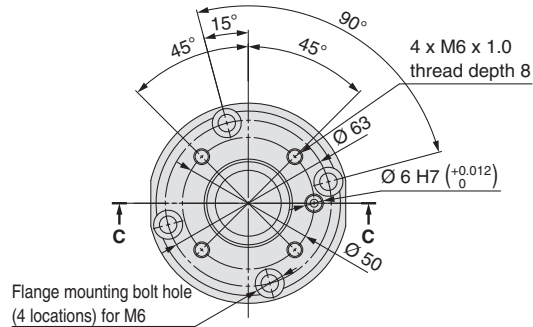


■ Flange for MOTOMAN-HC10DT from YASKAWA Electric (Robot identification symbol: 042N, 042P)

Accessories	Quantity
Hexagon socket head cap screw (M4 x 8)	2 pcs.
Hexagon socket head cap screw (M6 x 12)	4 pcs.
Cross recessed resin round head screw (M4 x 6)	2 pcs.
Positioning pin (6 x 10)	1 pc.
Cable fixture	2 pcs.
Tie band	2 pcs.

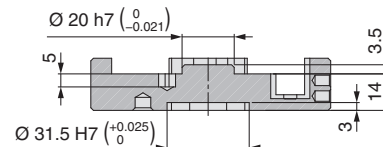
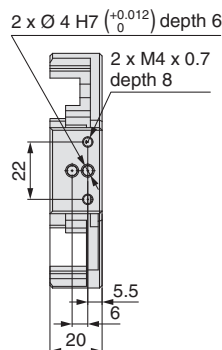
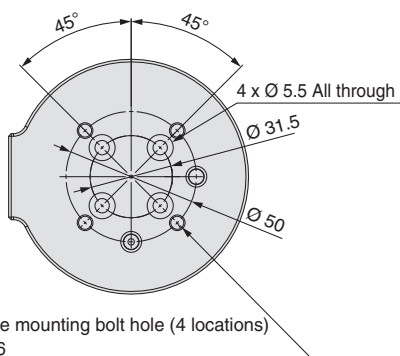


C-C (1:1)

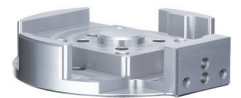
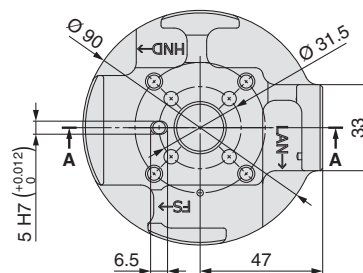


■ Flange for ASSISTA from Mitsubishi Electric (Robot identification symbol: 031N, 031P)

Accessories	Quantity
Hexagon socket head cap screw (M5 x 10)	4 pcs.
Positioning pin (5 x 10)	1 pc.






A-A (1:1)



Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)¹⁾, and other safety regulations.

 Danger:	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
 Warning:	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
 Caution:	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

- 1) ISO 4414: Pneumatic fluid power – General rules and safety requirements for systems and their components.
- ISO 4413: Hydraulic fluid power – General rules and safety requirements for systems and their components.
- IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
- ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.
- etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments.

Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogues and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.²⁾ Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
- 2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

Revision History

Edition B	- Tool changers (one-push and auto types) and a tool holder have been added. - A drop prevention circuit has been added. - The number of pages has been increased from 36 to 48.	OW
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Croatia	+385 (0)13707288	www.smc.hr	office@smc.hr
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Romania	+40 213205111	www.smcromania.ro	smcromania@smcromania.ro
Russia	+7 (812)3036600	www.smc.eu	sales@smcru.com
Slovakia	+421 (0)413213212	www.smc.sk	office@smc.sk
Slovenia	+386 (0)73885412	www.smc.si	office@smc.si
Spain	+34 945184100	www.smc.eu	post@smc.smces.es
Sweden	+46 (0)86031240	www.smc.nu	smc@smc.nu
Switzerland	+41 (0)523963131	www.smc.ch	info@smc.ch
Turkey	+90 212 489 0 440	www.smcturkey.com.tr	info@smcturkey.com.tr
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